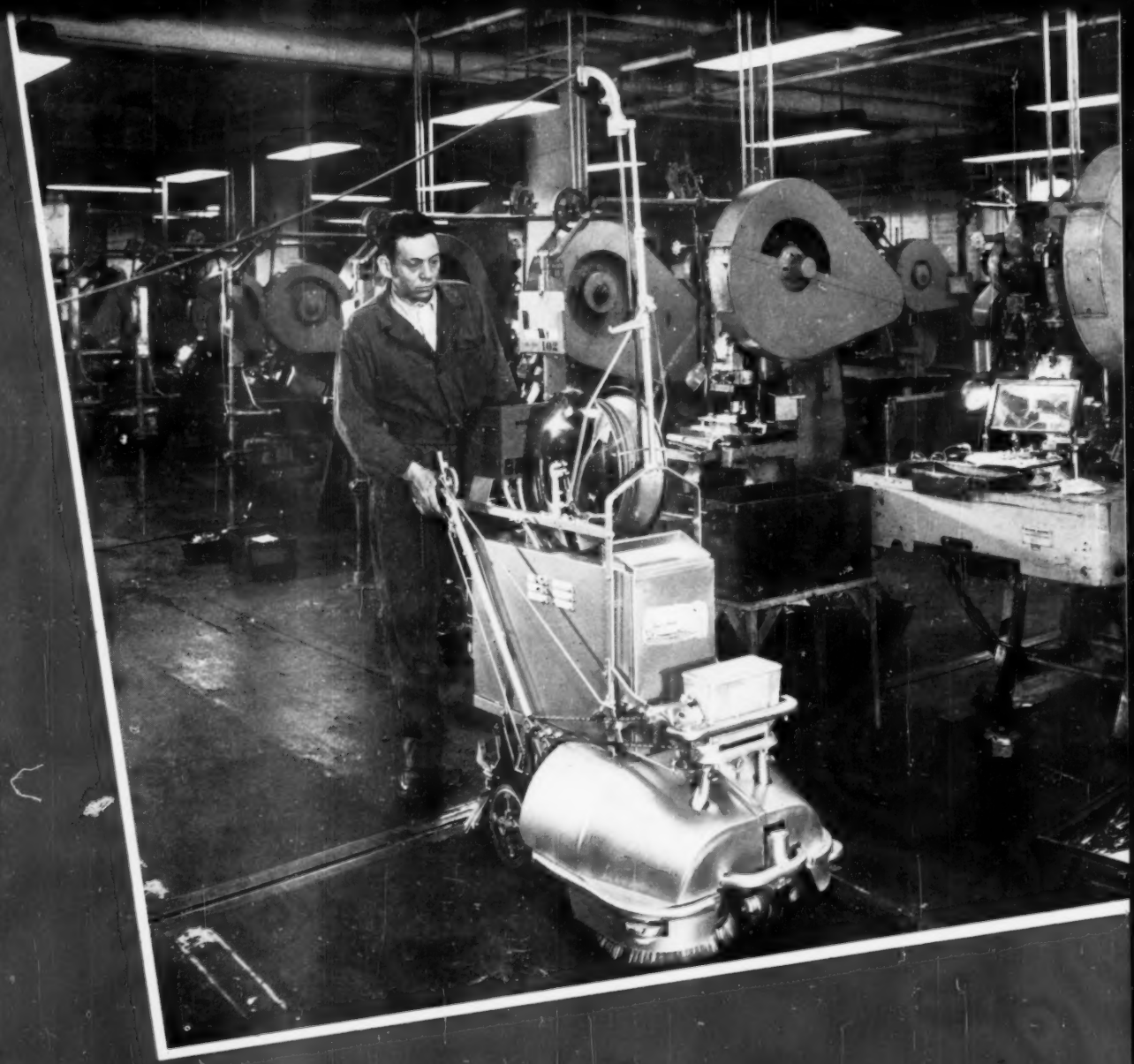


Safety Maintenance and Production

EST. 1901 AMERICA'S PIONEER MAGAZINE IN ITS FIELD

FIFTY CENTS JANUARY, 1954

Foot and Leg Protection

Stretch

Your Legging Money

Farther with the

NEW

AO 1512R-CL LEGGING

with Replaceable Fabric or Frame

COVERING OR SPRING MAY BE REPLACED SEPARATELY!

You put your best foot forward financially when you choose this spring type legging to protect your worker's legs and ankles. Why? Because both the frame and fabric are removable and replaceable. Should either the frame or the fabric become unusable, either can be replaced. This feature is a great advantage over most leggings from a cost standpoint; yet the worker's safety and protection have in no way been minimized.

This very serviceable legging is available in chrome-tanned cowhide as the 1512R-CL . . . in asbestos as the 1481R-A . . . in flame-resisting duck as the 1482R-FR. Your AO Safety Products Representative can supply you with this highly serviceable protection.

NOTE: We recommend AO chrome-tanned cowhide or asbestos for protection against heat, sparks, and hot metal splashes. AO flame-resisting duck will do a fine protective job against sparks.

American Optical

SAFETY PRODUCTS DIVISION

AO SAFETY ZONE

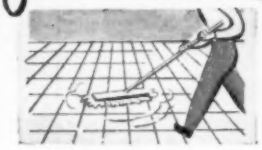
Keep your workers in the Safety Zone with AO Safety Equipment

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

(For further details, use Key # N-1 on free Inquiry Card on page 71)

Why make a Safe Floor Slippery?

Hours of labor time are spent in treating expensive floors for slip-resistant beauty.



When an oily floor dressing is chosen that softens the wax film or leaves an oily residue.

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the new, safe way to daily dust up!

Leaves Floors Cleanly Fresh and Dust-Free

Will Not Soften Wax Film
Leaves No Oily Residue
Won't Decrease Frictional Resistance

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There's nothing on the market to compare with Hil-Sweep for daily maintenance. Clear, transparent, clean-smelling, Hil-Sweep picks up dust, leaves a lustre-new look with no harmful effect on your surface treatment. Surface treatment lasts longer. You save labor-time in sweeping and daily maintenance of your floors. Mail coupon below for a demonstration. Advice and help are free.

. . . on your staff not your payroll

Branches in Principal Cities

Hillyard Chemical Co., St. Joseph, Mo.

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Institution.....
Address.....
City..... State.....

And Here are Other Good Reasons Why HIL-SWEEP is "Sweeping" the Country

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- Won't load mop. After using simply shake out and brush or cloth is ready to use again. Saves on laundry and dry cleaning bills.
- Imparts a pleasant aroma where used.

(For further details, use Key # N-2 on free Inquiry Card on page 71)

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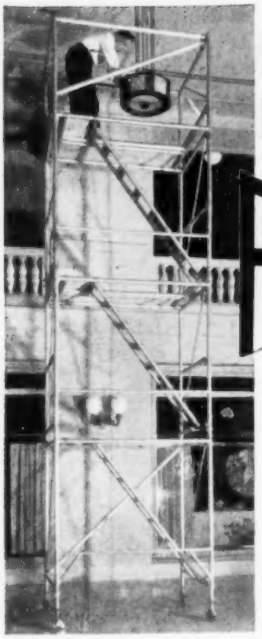


No Acrobatics! No Flip-Flops!

with the

FOLD-A-WAY

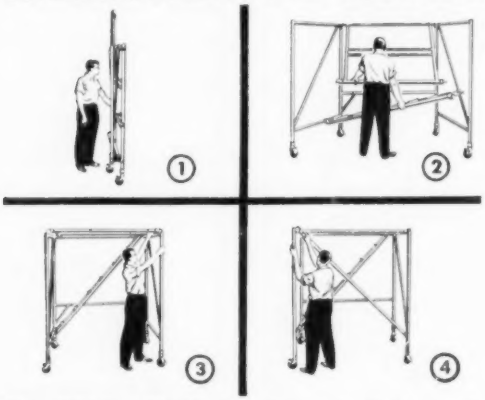
TRADE MARK

SCAFFOLD

ALUMINUM

Underwriters' Laboratories approved

HERE'S WHY: For erection, the end frames of this new aluminum scaffold swing open sideways, as shown below. Maximum swing of any component is 90 degrees, so the erector is always *within* the base area. One man erects the base section in less than a minute.



The FOLD-AWAY Aluminum Scaffold stands freely and will not "fold under" during erection. Superior construction features include coped and *full-welded* joints, adjustable legs with casters that lock at both wheel and swivel.

Write for illustrated Bulletin ASF-1

Aluminum Sectional Ladder Scaffolds are extremely mobile. 24" width permits use in restricted areas. 6', 8' and 10' spans; ladders 4'3", 5'8" and 6'1" high, slip together easily for desired height. Underwriters' Laboratories approved. Write for Bulletin AS-2.

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Branches In All Principal Cities

(For further details, use Key # N-48 on free Inquiry Card on page 71)

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Dry-Chemical Extinguisher 69
Free Fire Prevention Bulletins 71

New! Improved Design! Greater Safety!

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SAVE WITH SAFETY! ORDER DIRECT FROM

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809

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The 809 is a general purpose goggle that meets government specifications in providing impact protection from particles striking from any angle and in achieving distortion-free vision. This one-piece goggle formed of non-inflammable, optical plastic affords exceptional wide angle vision, fits comfortably over large frame personal glasses. More than 100 tiny air vents on the top and sides allow constant ventilation. The 809 is lightweight providing new comfort, increased efficiency, preventing wearer fatigue.
Available in the models shown . . . all equipped with easy-to-adjust elastic headbands.

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NO. 809S
Green Sides
Clear Lens

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(For further details, use Key # N-3 on free Inquiry Card on page 71)

Men in
your plant
like VUL-CORK
soles
on the newer
dress-style
safety shoes
because
VUL-CORK,
besides its
primary qualities,
never gets
ragged, doesn't
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That helps get
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Vul-Cork Div., Taneytown, Md.
. . . makers of Vul-Cork

(Use Key # N-4 on Inquiry Card on page 71)

THE Future SHOWS

Milwaukee, Wis. *Jan. 18–19*

Twelfth Annual Mid-Winter Wisconsin Safety Conference & Exposition (Hotel Schroeder).

Chicago, Ill. *Jan. 25–28*

Plant Maintenance & Engineering Show (International Amphitheater). Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Dayton, Ohio *Feb. 10*

Second Annual Miami Valley Safety Conference (Biltmore Hotel). Marvin Purk, Dayton Chamber of Commerce, Biltmore Hotel, Dayton 2, Ohio.

San Francisco, Calif. *Feb. 11–12*

California Industrial Safety Conference. (Palace Hotel). A. C. Blackman, Chief, Division of Industrial Safety, 965 Mission St., San Francisco 3, Calif.

Louisville, Ky. *March 7–9*

Southern Safety Conference & Exposition (Kentucky Hotel). W. L. Groth, Executive Director, P. O. Box 8927, Richmond 25, Va.

Philadelphia, Pa. *March 10–11*

Twentieth Annual Philadelphia Regional Safety and Fire Conference and Exhibit (Bellevue-Stratford Hotel). Walter W. Matthews, Managing Director, Philadelphia Chamber of Commerce Safety Council, Architects Building, 17th and Samson Streets, Philadelphia 3, Pa.

Indianapolis, Ind. *March 17–18*

Seventh Annual Central Indiana Safety Conference and Exhibit (Claypool Hotel). Indianapolis Safety Council, 320 North Meridian St., Indianapolis 11, Ind.

Dallas, Texas *March 29–30*

Fifteenth Annual Texas Safety Conference (Baker Hotel). E. B. Tilley, Texas Safety Association, Inc., 830 Littlefield Bldg., Austin, Texas.

Pittsburgh, Pa. *March 30–31*

Twenty-ninth Annual Western Pennsylvania Safety Conference and Exhibition (Hotel William Penn). Harry H. Brainerd, Executive Manager, Western Pennsylvania Safety Council, 605 Park Bldg., Pittsburgh 22, Pa.

New York, N. Y. *April 6–9*

Twenty-fourth Greater New York Safety Convention and Exposition (Hotel Statler). George E. Decker, Lincoln Building, 60 East 42nd St., New York 17, N. Y.

Charleston, W. Va. *April 14–16*

Twentieth Annual West Virginia Safety Conference. Charles Hopkins, West Virginia Safety Council, 316-17 Masonic Office Bldg., Charleston, W. Va.

Detroit, Mich. *April 20–22*

Michigan State Safety Conference (Sheraton Cadillac Hotel). Jerry Moore, executive secretary, Corporate Service, Inc., Detroit, Michigan.

Fort Wayne, Ind. *April 27–28*

Northeastern Indiana Safety Conference & Exposition. Ivan A. Martin, manager Fort Wayne Safety Council, Chamber of Commerce of Fort Wayne, Fort Wayne 2, Ind.

St. Louis, Mo. *April 27–29*

Central States Safety Conference (Hotel Chase). H. G. Miller, chairman exhibits committee, % the Safety Council of Greater St. Louis, 511 Locust St., St. Louis 1, Missouri.

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T.M. REG. U.S. PAT. OFF.
SILICONE TREATED
American industry's swing to MAGIC LENS TISSUE (Silicone treated) is one of the greatest success stories of the Safety field.
Each sheet is over 50% larger than usual. Yet Magic costs you less. $8.40 per Carton (6 refills per carton). The compact Dispenser is only $2.50.
OR THIS FOR
GRIME - GRIT - PLASTICS
Magic
Lens Cleaning & Anti-Fogging Fluid
Heavy Duty
Magic
LENS CLEANING STATION
Just touch the top and PRESTO! The locked-on pressure can does the rest.

BOTH BEST IN AMERICA'S SAFETY BOOK

NOW comes our HEAVY DUTY Cleaning Station; for coal mines, foundries, heavy-grit areas, or where anti-fogging fluid is necessary as in packing houses, canneries, etc.—on PLASTIC GOGGLES, SAFETY SHIELDS or any PROTECTIVE EYE-WEAR.

The MAGIC Cleaning & Anti-fogging fluid is Pressure-packed. No pump. No fuss. No mess. About 1,400 applications per can. Goes twice as far as old-fashioned bottles. This cuts your maintenance 75%. No extra attachments. No double inventory. No bottles or plungers to stock. Nothing to refill and priced at only $12.50 per carton of twelve 12-oz. cans.

The Heavy Duty Dispenser locks the can in place. No pilferage. 20 gauge steel. Indestructible. Compact. It is so ingeniously constructed, including ample space for disposal of tissues, that it is only half the size of ordinary cabinets. Feeds each sheet 1-by-1 at a great saving. Whereas ordinary cabinets cost ten or twelve dollars this superior cabinet costs only $5.95.

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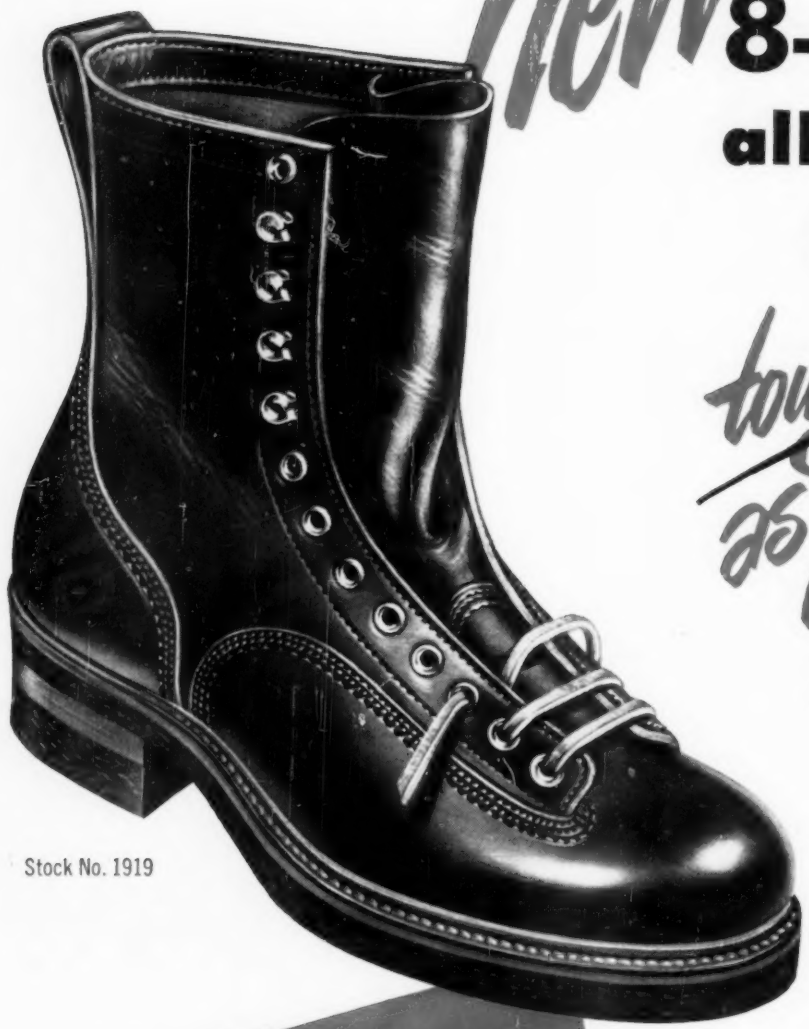
Wire or write us today, or order through your Safety Jobber now.

The Silicone Paper Company of America, Inc.
General Offices: 75 E. 45th St., N.Y. 17, N.Y.

(For further details, use Key # N-5 on free Inquiry Card on page 71)

new 8-inch all-purpose boot

tough as the men who wear them



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SAFETY SHOE COMPANY
ALLENTOWN, PA.

We've spared nothing to make this one of the finest, toughest work boots ever built. It's *all* leather – *prime* leather – from pull-strap to insole – stays soft and pliable through muck and weather. The new lace-to-toe pattern moulds the shoe to the foot like a sock – and feels as good. The oversize vulcork-Neoprene outsole and heel give safe, sure footing – resist even oil and grease – will outwear anything short of hobnails. Nobody gives work shoes a harder time than yard men. Use it for every outdoor job where the going is rough.

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EST. 1901

VOL. 107, NO. 1 **JANUARY, 1954**

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Our Thanks for the Courtesy
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AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE & PRODUCTION is indexed regularly by Engineering Index, Inc., New York

It's Safe to Say

EDITORIAL PAGE BY ALFRED M. BEST

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★ SAFETY, PAST AND FUTURE

AT THIS season of the year, newspapers of the country rightly devote considerable space to a year-end review and a preview of the new year covering life in these United States. Without the slightest degree of complacency, the accident prevention movement can take much pride in its accomplishments in the year just closed.

Industry in general operated at a peace-time peak and fortunately safety progress kept pace, as it always does when progressive management recognizes the fact that the accident prevention crusade plays a vital role in efficiency and production.

Great strides were made in 1953 in implementing the premise that the American way of life means placing more and more value on life itself. Industrial management, the compensation writing insurance fraternity and organizations devoted to the conservation of life and limb all achieved enviable records in protecting our people against the day to day hazards of industry. In countless ways, hazards either were eliminated entirely or so minimized by protective procedures and equipment as to bring about a degree of safety unsurpassed anywhere this side of the Iron Curtain. On the other side of that curtain, of course, individual life and safety are dismissed as a matter of no importance.

Fortunately, the smug attitude has no place in the safety movement. One life lost in a preventable accident, one eye lost or one body maimed—all are one too many. As new techniques bring new hazards in their wake, new safeguards will be devised to protect the present working forces and those new men and women yet to take their place in the American industry. Already we have seen special awards given to those industries seemingly in the most hazardous category. Plants in the field of atomic energy have discovered means of surrounding its workers with the mantle of protection.

As in other phases of our daily lives, Utopia is still a dream in the never-ending march toward ultimate safety. However, we have faith that a perfect blend of the practical and the idealistic, plus large doses of American know-how will help us achieve still greater gains in 1954 and the years to come.

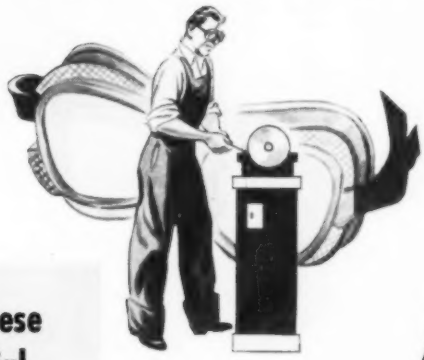
★ PLANT MAINTENANCE

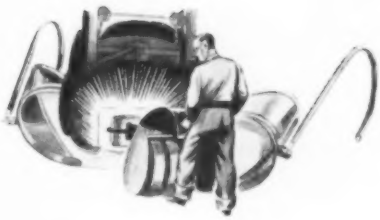
EXPERT speakers drawn from all segments of industry will address the Plant Maintenance & Engineering Conference, scheduled for the week of January 25th in the City of Chicago.

Now among the five largest industrial shows held in the country, the Conference features a huge exposition where thousands of new products and devices will be on display at the International Amphitheatre. Among the subjects covered, both at the meetings and in the vast Exhibition Hall, will be preventive maintenance, sanitation, lighting, work standards, plant cleaning techniques, occupational dermatitis and other now-recognized phases of industrial plant maintenance and safety.

H.A.

For every eye hazard a "field tested" answer!





New methods and machines in modern industry keep creating new dangers to workers' eyesight. Bausch & Lomb, pioneer in the development of heat-treated impact-resistant lenses, is likewise a pioneer in the design of eyewear frames and other eye protection devices.

There is no industrial eye hazard for which Bausch & Lomb has not developed the most dependable solution —or for which Bausch & Lomb is not best qualified to approach with skilled research effort.

Typical problems: providing ample protection against impact—frontal and oblique—against dust, splash, harmful light energy radiation; always with emphasis on worker comfort and efficiency.

Depend upon the Bausch & Lomb safety eyewear supplier in your area for advice and quick service. He is thoroughly qualified to aid in the solution of any eye protection problem that may arise in your plant. Ask for 48-page catalog of complete Bausch & Lomb line, showing practical application to all job requirements. Write: Bausch & Lomb Optical Company, 90525 Smith Street, Rochester, N. Y.

You can benefit from these Bausch & Lomb industrial vision services

1. **Complete Line of Protective Eyewear —Completely dependable safety eyewear engineered to meet the most rigid tests for every job in your plant. Protection from all types of eye hazards.**

2. **Corrective-Protective Service — Fast, dependable laboratory service in every major industrial area for professionally-prescribed corrective safety lenses for worker comfort and efficiency.**

3. **Plant Surveys on Eye Protection— Bausch & Lomb offers services of experienced safety experts to investigate problems of eye-hazardous operations in your plant and make recommendations for their solution.**

4. **Employee Education Programs—Posters for bulletin boards, pay envelope inserts, other material designed to stimulate interest among workers for eye safety measures; an adjunct to your safety program.**

5. **Occupational Vision Service—A quick, dependable method for relating visual performance of each employee to his job. The Bausch & Lomb Ortho-Rater is especially valuable for identifying accident-prone workers.**

6. **Leadership in Optical Science—For 100 years Bausch & Lomb has been a leader in research and development of products to serve better the optical and visual needs of mankind. All industry is profiting today from this knowledge and experience.**

BAUSCH & LOMB *Safety Eyewear*

(For further details, use Key # N-7 on free Inquiry Card on page 71)

Welsh-Guard

Welders Cover Goggles
STYLE No. H22

Welsh-Guard

Dust-Free Fog-Free Goggles
STYLE No. 1040

WE

FACE AND EYE

Welsh-Guard

Metal Frame Spectacle Goggles
STYLE No. H34

Welsh-Guard

Featherweight Face Shields
STYLE No. F120

ASK YOUR SAFETY REPRESENTATIVE FOR WELSH FACE AND EYE PROTECTIVE PRODUCTS

"Safeguard

Established

(For further details, use Key # N-6 on free Inquiry Card on page 71)

Welsh-Guard

Acetate Frame Spectacle Goggles
STYLE No. H20

Welsh-Guard

Featherweight Plastic Goggles
Clear and Green
STYLE No. 1050

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PROTECTIVE PRODUCTS

Welsh-Guard

Welders Fiberglass Helmet
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Welsh-Guard

Featherweight Clear Plastic Lens
for STYLE H20, H34 FRAMES

with Welsh-Guards"

1925

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TUC-AWAY
MODEL 415

WATCHEMOKET eye SAVERS

EYE PROTECTION YOUR WORKERS WILL WEAR

1. Light weight . . . a little over an ounce means complete comfort.
2. Easy on the ear . . . plastic "ball-chain" hook stays on . . . always comfortable.
3. Perfect fit . . . Retrax Temples can be adjusted by the wearer in an instant.
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ONLY EYE-SAVERS HAVE ALL THESE FEATURES

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Featherweight construction and attractive design are two important reasons why workers *like* to wear the Tuc-Away. Weight is only 1¼ ounces. Methacrylate lenses are two-thirds lighter than glass.

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Clear or colored lenses can be removed and inserted quickly and easily by the worker. No need for a special repair department to meet different hazard conditions. Once in place they cannot be knocked out.

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Semi-cup lens provide clear, two-way protection. Also available for bench work with full (1") side shields and regular (½") side shields.

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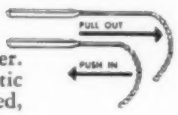

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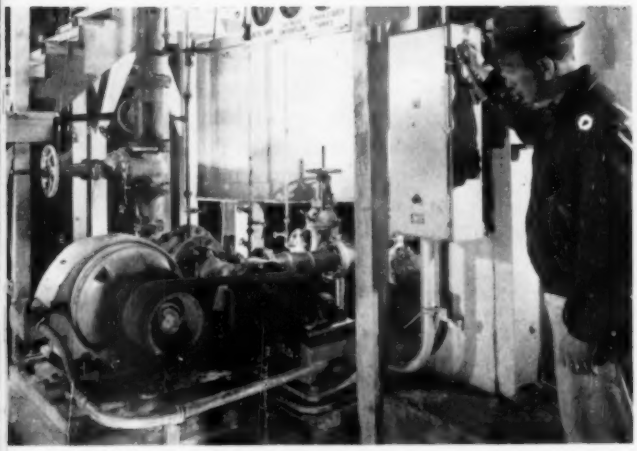
SAFETY MAINTENANCE & PRODUCTION

VOL. 107, No. 1 • JANUARY, 1954



Let the Belt Carry the Static

By FRANK H. RUMBLE
Texrope Drive Specialist
Allis-Chalmers Mfg. Co.
Milwaukee, Wisconsin

IN AN explosive atmosphere a static spark is undesirable and dangerous. Specially constructed V-belts which guard against static sparks are employed in explosive atmospheres. What is a static conducting V-belt and how does it work?

A static conducting V-belt, as its name implies, is one which will actually ***conduct*** static electricity. While the belt is in motion, traveling around the sheaves, it will carry any static which may be generated, along the belt to the metal sheaves, where it is disposed of harmlessly, provided the motor and driven machine are properly grounded. Thus, by draining away and dissipating static as soon as it is formed, the possibility of accumulating and building up a static charge to a point where a spark will result, is almost entirely eliminated.

The static conducting V-belt is sometimes referred to as a static resisting belt. This does not mean that such a V-belt actually ***resists*** the generation of static electricity or resists the flow of static throughout its entire length, but simply that it resists the building up of a dangerous static charge by allowing the static to bleed off as it is formed.

Static Electricity

Static electricity is caused by two unlike substances rubbing together. Rubber, leather, fabric and all other types of V-belts will generate static electricity while running over sheaves under normal operating conditions. There is no way to prevent it. In many cases with ordinary V-belts the static charge which is generated bleeds off through the air and no sparking occurs. However, in other instances, especially in a quiet atmosphere with low humidity conditions, very high voltages may be built up on the surface of the belt and, after a time, the static charge will escape by jumping from a section of the belt to the sheave, the guard or some other nearby conductor in the form of a spark. The potential of the static charge and, therefore, the size of the resultant spark, is dependent on atmospheric conditions, the composition of the belt, its speed, sheave sizes, the belt cross section dimensions, the amount of slippage, etc.

Since there is no practical way to prevent the formation of static, the only logical solution is to remove the static as soon as it is formed. If standard V-belts of high resistivity are used on a drive and a charge is built up, there are several ways of removing the charge. One of the most common methods in the past has been the use of grounded wire combs or brushes contacting the surface of all the belts and bleeding off the static. In some instances the sheaves are grounded and a conductive paint is applied to the belts to make them a conductor of static.

Both of these methods are effective to a degree, but are generally unsatisfactory because of the maintenance difficulty and the uncertainty as to whether or not they are operating properly at all times. It is easy for a brush to get out of alignment so that it does not touch all of the belts, or paint may wear away quickly, leaving the surface of a belt bare and without protection. The best way to be sure of maximum protection from static every min-

ute is to use static conducting belts which are prepared with a static conducting element during manufacture. The static conducting property is imparted by certain materials which are mixed into the compounds used in the various parts of the belts.

Types of V-Belts

There are two schools of thought among V-belt manufacturers concerning the construction of static belts. Many makers feature a compounded belt that has conducting properties throughout the complete cross section of the belt, contending that such a belt is safer and will give more thorough protection. Other manufacturers make static conducting belts with the conducting property in the friction and coat of the cover stock only. They claim advantages somewhat as follows: (1) While it is a known fact that a perfect conductor will carry an electric charge throughout its entire cross section, it is the charge on the surface only that may induce a spark jump if static is allowed to build up. Therefore, it is the cover or outer surface of the belt only which needs to be made to act as a conductor for the static electricity. (2) This construction contributes to longer belt life. Too much or too many pigments decreases the quality of a rubber compound.

It has been found by test that the more the compound is "loaded" to afford better conducting qualities, the more the belt life is decreased. Since the static conducting element is put in the compound of the cover only, there is no need to alter or change the compound in the belt core from that normally used for longest belt life.

To determine the conductivity of a static belt a section of it is tested for the amount of resistance to an electric current between two contact points. In general, the less the resistance, the greater is its conductivity and effectiveness as a static belt. Before a standard method of testing was adopted, there was some difference of opinion as to how conductive a static conducting belt should be in order to eliminate any possibility of building up a dangerous static charge. The results of tests and experiments by many companies, some outside the rubber industry, were valuable in helping to set up the standard.

For instance, an industrial fire insurance company some years ago, in a series of tests, concluded that a V-belt having a resistance of 75 megohms or less, when tested across 4 inches of its surface by a 500 volt megger unit, would not build up a high static potential provided the belt was driven from a grounded metal sheave to a grounded metal sheave.

One manufacturer of static belts, after a number of tests conducted under low humidity conditions—9 to 33 percent—found that no measurable static voltage was built up in belts having a resistance as high as 100 megohms over a 4-inch length of belt. A source outside the rubber industry, checking on the safe handling of gasoline, determined that no sparks can occur between two metal contacts no matter how short the gap, unless a potential of approximately 300 volts exists across the gap.

Belt Standard

After many tests and experiments the Rubber Manufacture's Association set up the following standard which today governs the manufacture and sale of static V-belts:

"The RMA standard method of measuring conductivity of endless V-belts shall consist of two ⅝ inch diameter flat contacts, 8½ inches on centers, and moistened with water, and pressed against the belt with 25 pound pressure total for the two contacts. The conductivity shall be measured on a 500 volt megger unit. Belts having a resistivity of 6 megohms or less on the new belt, measured by the above method, can be classified as static conducting."

Most static belts are fully checked for static conducting properties just before shipment from the factory. Since test and experience show no evidence of static build-up in V-belts having an allowable resistance when new of 6 megohms or less over an 8½ inch length, it can safely be assumed that such protection is more than adequate.

One of the most important facts to remember is that unless metal sheaves are used and the motor machine adequately grounded, no matter what static belt is used there will be no protection against sparking. Further, the drive must be protected at all times. Dirt, oil, water, etc., coming in contact with them may change the characteristics of static belts. Keeping the belts clean is added assurance that they will retain their properties and do the job they were designed to do—be a conductor of static electricity.

Picture by courtesy of Allis Chalmers Mfg. Co.

West Will Have Own Plant Maintenance Show

PLANS for the West's first Plant Maintenance Show are revealed by Clapp & Poliak, Inc., national exposition management firm, and a board of western industrialist sponsors. The show is scheduled for the Pan Pacific Auditorium in Los Angeles, July 13–14–15, 1954. It will be held concurrently with a Plant Maintenance Conference, directed by L. C. Morrow, consulting editor of Factory Management & Maintenance magazine.

The western show is to be modeled after the plant maintenance shows which Clapp & Poliak, Inc., have produced in major eastern industrial centers during the past 5 years and will underscore the specialized problems of maintenance and engineering for western industry.

According to Saul Poliak, the firm's western office has been making a thorough survey of western industrial plant methods and specialized maintenance problems for the past 2 years. Many of the facilities are new and designed with the benefit of the latest and most up-to-date planning, so they can employ both operating and maintenance methods not practical in older areas.

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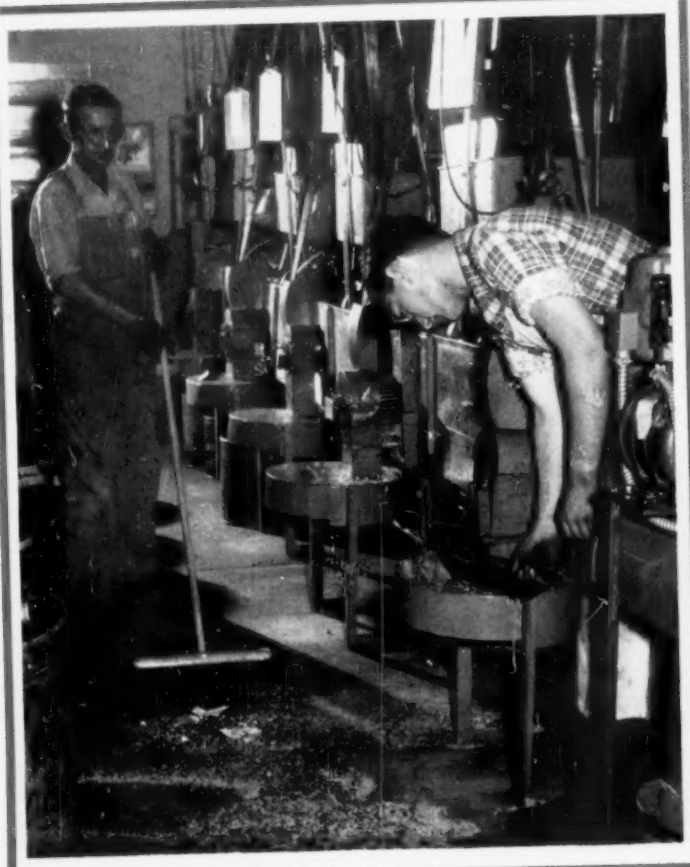
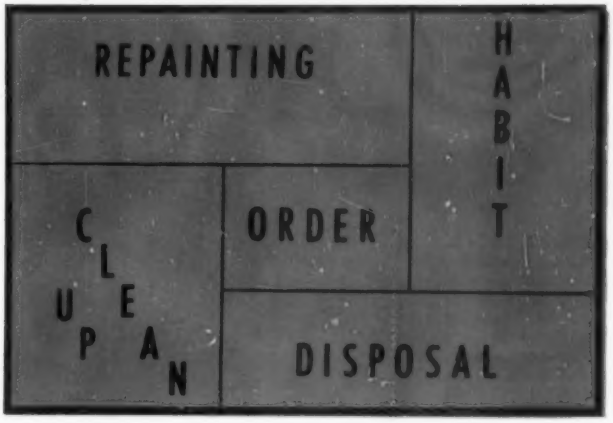
What Does Good Houseke



eping Look Like?



HOW many times have you heard or said, "If I could only get far enough away so I could see the whole picture?" Let's draw a picture of some of the elements of good housekeeping and see how they fit:

HABIT—This picture illustrates one of the "little things" which keep a plant clean or dirty . . . putting a piece of paper in a waste can. If you can educate your workers and instill in them enthusiasm for a clean plant, while encouraging them by providing equipment to assist housekeeping, you'll go a long way towards making a clean plant a habit.

DISPOSAL—Keeping the plant clean means all scrap, paper and rags must be disposed of. This picture shows scrap being burned in a definite designated area. Disposal may require an incinerator or, perhaps, burning won't do at all and another method must be used. Here's where the paper in the previous picture wound up!

CLEAN UP—Here's an example of the attitude shown in the first picture, helping in the disposal of waste (second picture). It's quite a job to keep these machines and the floor around them clean, but these men are working together to prevent the accumulation of trash and make their work pleasanter and safer.

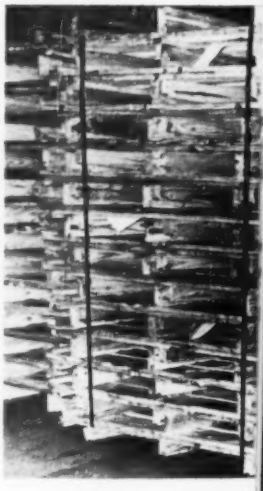
REPAINTING—Just wanting things clean, cleaning them up, and disposing of the trash leaves out part of the picture of good housekeeping. Renewing, repairing and repainting the plant is also important. Here one painter is putting a finishing touch on a guard rail while another repaints an aisle marker. The new look that fresh paint produces, inspires cleanliness, too.

ORDER—As great an enemy of good housekeeping as dirt is disorderliness. You can't get at dirt to clean it up, if you can't separate the trash from usable materials. This picture shows a tool drawer, but disorder is dangerous anywhere. It destroys any picture you try to build with habit, disposal, cleanup and repainting. Oh, yes, good housekeeping is just part of the safety picture!

Pictures by courtesy of "The Westerner."

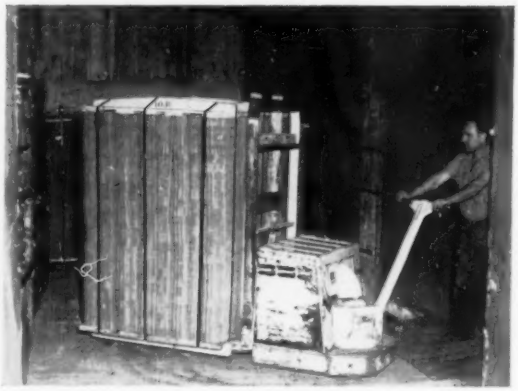
FOR EASY SHIP

Die-cut package blanks are accumulated on pallets in predetermined loading patterns as they come from press. Pallet load in foreground, when completed, will contain 32,400 blanks. Pattern of blanks will permit binding them with steel bands for shipping without the danger of damage in transit which would hinder forming them in boxes and cartons.



Matching sets of pallets and top braces, purchased in quantity, are steel-strapped and stored in compact space to be supplied to the finishing end of the carton blank press, when needed. In bundles of 13, sets of pallets and braces are strapped together for shipment back to carton plant for reuse.

Take Your Material . . . And a



After steel banding of pallets, carton blanks in unit load are stored until shipment. All moving is done by power and hand truck. They are then stowed aboard outgoing carriers, again by materials-handling truck or cart.

Load sizes are selected with a view toward optimum use of available space in both closed highway vehicles and box cars. For shipping in box cars the only dunnage required for the carton blanks in unit loads is the bulkhead being inserted in picture.

Load It . . . Secure

FEATURE

Third article of a series on Materials Handling Equipment. First two articles of the series appeared in the November and December issues.

By HARLAND R. BLACK
Manager, Materials Handling Div.
Traffic Dept., National Biscuit Co.
New York, N. Y.

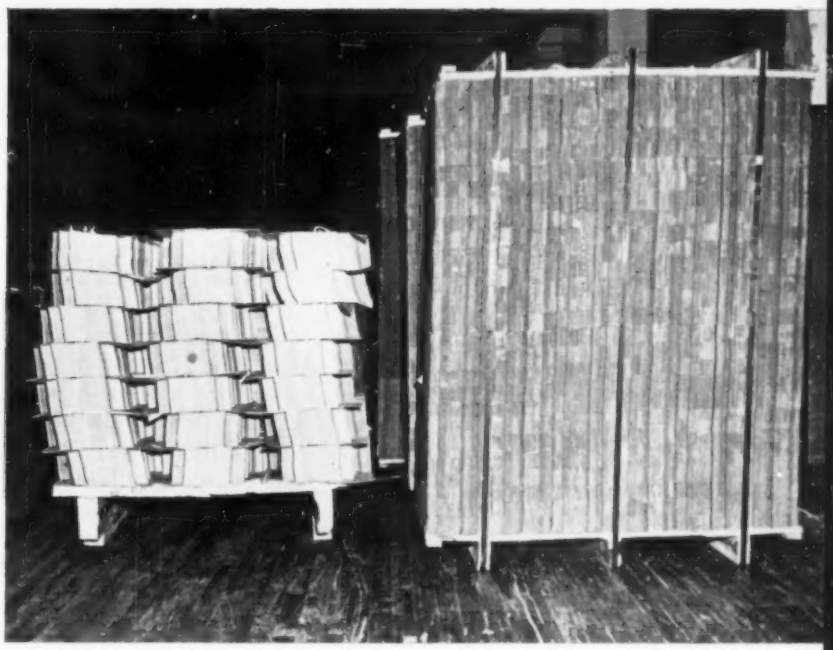
USING the pallet as a carrying medium, many small bundles may be picked up and transported in one operation with powered materials-handling equipment. This method of handling materials represents the unit load principle which has in recent years received widespread adoption. In general, unit loads are formed on pallets or skid platforms, and material may be palletized or placed on skids either at the receiving dock of the user's plant where subsequent intra-plant movements are accomplished by industrial trucks, or at the point of manufacture and shipped via one of the modes of transportation to its ultimate destination.

When materials are palletized or placed on skids for shipment by the manufacturer, it is logical to assume that the commodity must be secured to the pallet or skid with steel strapping, or by other means, in order to ensure safe arrival at destination. When a pallet is used for this purpose, such a unit load may then be considered as a ***Pallet Package.***

By making use of the pallet as a package, it is possible to mechanize handling operations through use of modern materials-handling equipment, such as battery—or gasoline—

PING...

Illustration at right contrasts the old and new methods of handling carton blanks. The old method required manual bundling and tying plus stowing in outgoing carriers by hand, a single bundle at a time. The new method eliminates these steps and permits the power carloading of pallet-size unit-loads.



Pallet . . . And Make A Pallet Package!

Picture shows pallet loads of carton blanks securely braced by dunnage lumber in box car. In loading cars pallets are placed in pairs to make a uniform load secured by the bulkhead. Dunnage lumber is salvaged by receiving plant for reshipment.

It . . . And Cut Your Handling Costs

powered fork lift trucks, or motorized and hand-operated pallet trucks. The advantages to be gained through use of materials-handling equipment include reduced product damage because of less man-handlings of individual packages; promotion of cleanliness and other characteristics of good housekeeping; improved morale of employees, by reducing the manual energy required to perform work; lower packaging costs resulting from a decrease in the number of smaller units to be packaged; reduced inventory-taking time and cost by use of uniform loads; reduced handling costs because less time is consumed when moving larger units of material at one time by mechanical equipment; increased capacity of storage areas, due to high-tiering, unless, of course, building limitations prohibit this practice; quick and easy transferral of palletized material from one warehouse to another, or between locations within a warehouse; more efficient utilization of shipping and receiving docks due to decreased time for loading and unloading railroad cars and motor trucks; in some specific instances, greater machine efficiency obtained as a result of less damaged material.

Pallet Package Investigated

National Biscuit Company operates two carton plants, producing unfolded, die-cut carton blanks for distribution to the company's various cracker bakeries, where they are folded into boxes used in the packaging of bakery products. Operations at one plant appeared to be particularly adaptable to palletizing and at the same time posed problems which, if solved, would pave

the way for immediate adoption of palletized shipping from another plant. We made an investigation of the dock conditions, floor and elevator capacities, vertical and horizontal clearances at the company's bakeries as well as at the carton plant itself. This investigation disclosed that, due to insufficient floor load capacities, some of the bakeries could not use fork lift trucks . . . and this eliminated the possibility of double-decking unit loads for shipment at the carton plant.

Simultaneously, a preliminary cost analysis was made for the purpose of determining the potential economic value of palletized shipping. It was evident from this study that the cost of operating any new system would have to be kept at an absolute minimum, if its success was to be assured. This was due largely to the low cost of packaging small bundles of carton blanks and the fact that little or no expense was being incurred for car bracing under the method we proposed to replace. Also, an important decision had to be reached regarding the type of pallet to be adopted—whether it should be of an expendable nature, or of the returnable type. All other factors, however, favored the pallet package and mechanized handling.

After making these initial steps we began experimenting with various types of palletized units and made many trial shipments, both by rail and motor truck. Today, about 70 percent of the production of one carton plant is being shipped on steel-strapped, single-decked wood pallets to various bakeries. Truck shipments handle a portion of the output, but by far the greatest percent of the shipments is in railroad cars. As a result of this new method, a whole series of bundling operations has been discarded; and also, bundle-by-bundle manual handling has largely been eliminated.

What Kind of Pallet?

During the experimental period of the palletization program, we endeavored to standardize on a few sizes of pallets that would accommodate all material lending itself to palletization, but we soon discovered that carton blanks could not overhang the pallets by so much as a fraction of an inch without being damaged by the steel strapping or from contact with adjacent loads. On the other hand, a pallet substantially larger than the load was not acceptable since this would permit the stacks of blanks to shift position during the shipping, resulting in damaged edges which would decrease the efficiency of the bakeries' automatic folding machines. Consequently, 24 different sizes of pallets are being used and they accommodate 49 different sizes of carton blanks and other packaged items.

Although many expendable pallets were tried and tested, no suitable one was found for this application, due not only to the high weight of the load, but because of the nature of the material as well. Furthermore, we discovered that the cost of a one-trip pallet would exceed the cost per trip of a returnable pallet plus the round trip freight expense, based on a life expectancy of five trips. Therefore, it was decided to design a special returnable pallet and top brace for the purpose. Softwood lumber, except for the hardwood strips, is used for constructing both the pallet and top brace, and a minimum amount of material is specified in order to avoid excessive freight expense and original cost. Pallets and top braces are purchased in carload quantities and this, too, minimizes original cost.

Railroad car or truck loading is quickly and easily accomplished by means of motorized pallet trucks, although the hand operated pallet truck proves advantageous when it is necessary or desirable to place 2 additional pallets in the doorway of the car, which is over and above the quantity that can be loaded with the powered hand trucks. Not all trailers and railroad cars are loaded completely with palletized material and, in many cases, after stowing a row of pallets down the center of a truck, the void space on either side of the row of pallets is loaded with miscellaneous supplies either because they do not lend themselves to palletization, or because the volume is too small.

While it is practicable to brace some cars with bundle stock, actually most cars containing palletized packages are braced with wood bulkheads held in position by steel bands. These bulkheads are fabricated at the carton plant and approximately 75 percent of the lumber used in their construction is salvaged by bakeries and re-used for bracing shipments of bakery products. This represents a definite cost advantage. To minimize car bracing costs, bulkheading lumber is purchased in carload quantities, and is cut to exact dimensions required in our operation.

Upon receipt of a shipment at a bakery, the palletized packages are removed from the truck trailer or railroad car by the same type of equipment that was used at the carton plant to load them. Specially designed magnesium dockboards are used to bridge the gaps between motor truck and box car floors, and to compensate for height differentials in the docks and the vehicle. Properly designed dockboards are of paramount importance when using motorized hand-pallet trucks due to the low underclearance of such trucks. *(Continued on page 37)*

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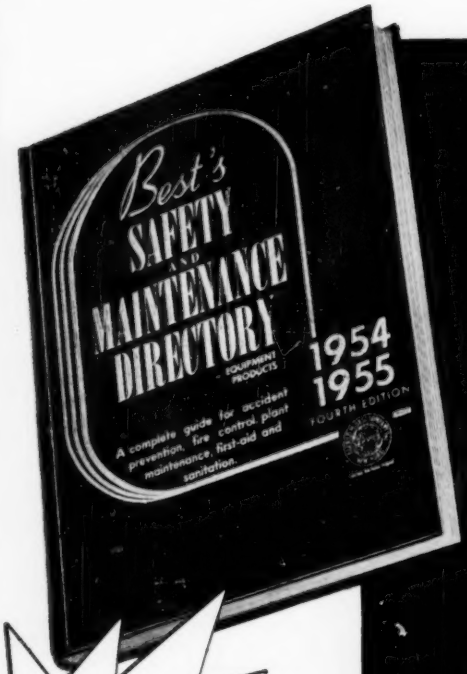
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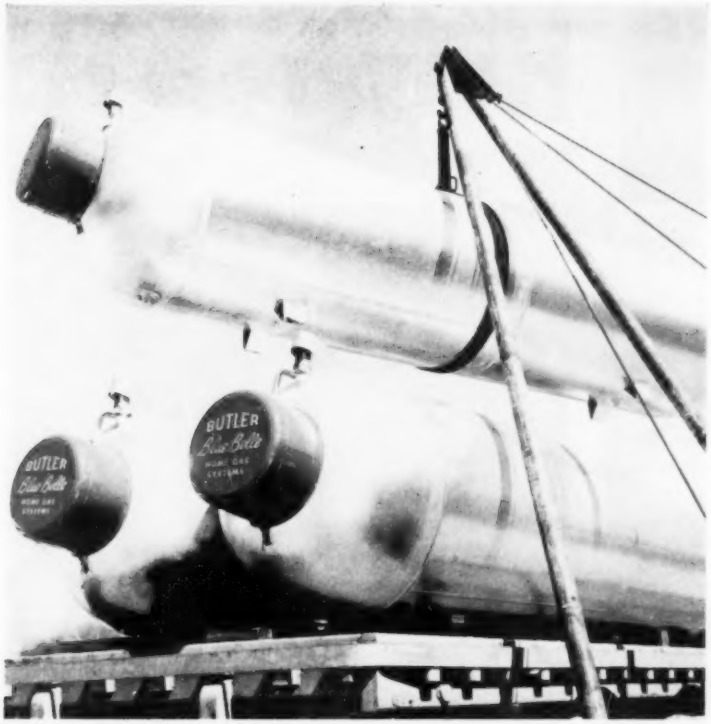


The picture at left shows the woven wire sling rigged in a choke hitch around a propane gas storage tank. The sling is wide enough and tight enough all around the tank to give perfect stability. It also speeds handling of the tanks tremendously.

The illustration below shows a conventional A-frame hoist mounted on the transporting truck unloading a propane gas storage tank with the aid of a single woven wire sling.

Woven Wire Slings Speed Tank Handling

HANDLING bulky propane gas storage tanks can be difficult because of their size and weight. However, the Butler Manufacturing Company at its Galesburg, Illinois plant has minimized this problem by using woven wire slings for lifting the tanks from trucks.

Fitting to Tank

The woven wire sling is fitted around the middle of a tank in a choke hitch with the free sling handle attached to an A-frame hoist mounted on the delivering truck. The complete hook-up can be made in a matter of seconds by simply pushing the woven wire sling under the tank body, passing the male handle through the female handle and hooking it to the crane hook.

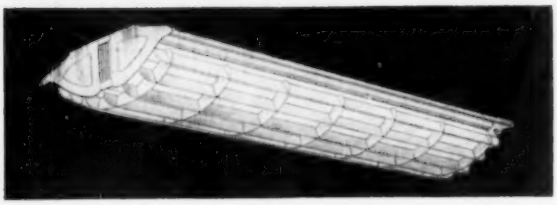
Because the woven wire sling is broad and flat, it provides a wider bearing surface, thus, a single sling can replace a bridle sling with equal load stability. In addition, the woven wire sling bends completely around the circumference of the load when rigged in the choke hitch, providing a tight grip. A choke hitch offers the greatest gripping power. A basket hitch, that is, with both handles on the hook, provides greatest sling strength.

The tanks shown in the illustrations are 3½ feet by 17 feet and weigh approximately 2380 lbs., empty. A woven wire sling 4 inches by 170 inches with a rated load capacity of 2400 pounds in a choke hitch is used.

The division safety engineer for the plant says, "Our shipping department foreman estimates that we have about a 20 percent savings in time, easier handling and hook-up, and a much safer operation with the sling."

In addition, woven wire slings are easy to store while the truck is travelling because they can be rolled up into a coil and kept either in the cab or on the trailer itself. Because of the woven wire construction, the slings will not kink or tangle even after long use.

Pictures by courtesy of Cambridge Wire Cloth Company.



HOW TO C

The louver above can be cleaned in 15 minutes! Here's how . . .

A recent test washing of this 4-lamp fixture, containing 3-inch by 5-inch cells, and hinged on all 4 corners required just that amount of time. The fixture was chosen as an average sized fixture common in many installations. Both experienced and inexperienced men participated in the test and they all finished the job in 15 minutes. For the system they followed to achieve this result, see the sequence of pictures.

FEATURE

First of a series of feature articles on Lighting Maintenance. Next articles will appear in the February and March issues.

STEP 1. Maintenance man removes the louver and lamps from the fixture. If he has a helper, he hands them down to be washed.

STEP 4. Get rid of dust and dirt around sockets by brushing on wash solution and rinse. Let drain dry. Rubber electrical tape around the metal parts of the brush reduces shock hazard.

STEP 5. Wash the inside of reflector. Here man is using a wash sponge in one hand a rinse sponge in the other. It is just such simple short-cuts that speed up the cleaning job.

STEP 8. Rinse the lamps. Use rag to hold lamp securely, but don't dry it. Sponges are outside bucket, ready for use on next lamp. Louvers are also washed and rinsed with sponge.

STEP 9. Wash louver with small sponge. Proper motion is across louver towards man cleaning, then away from him towards opposite side of louver on next stroke, wiping two blades at once.

LEAN YOUR LIGHTING!

STEP 2. Wash the top of the fixture and the outside ends. Heavy dirt collects here and requires bucket of detergent exclusively for it.

STEP 3. Render the fixture shock free. Turn off lights if you can see all right. Otherwise, cover sockets with masking tape.

STEP 6. Remove the tape from around sockets after reflector has been cleaned. This is done while standing up at the reflector. Sponges can be thrown into bucket to avoid loss of time.

STEP 7. Wash the lamps. Use a wash sponge in one hand a rinse sponge in the other, bracing lamp again knee. Don't throw sponge in bucket unless they are very dirty.

STEP 10. Replace lamps in sockets and return louver to its position in fixture. Lamps will take more of a beating than you think. Too gentle handling slows you down unnecessarily.

This article is based on a lecture

By J. W. TUTTLE
Application Engineering Dept.
Lamp Division, General Electric Co.

JUST what is lighting maintenance? Let's define it as any and all service activities aimed at improving the benefits of a lighting system. As such, it involves washing and painting walls and ceilings; for dirty or dark walls and ceilings absorb, instead of reflect, the light your eyes are supposed to get. An economical plan for replacing lamps in fixtures is an important factor, too. So are any necessary repairs to the lighting system. However, for the purposes of this discussion, let's confine ourselves to the cleaning of lighting fixtures and lamps.

The chief enemy of the lighting maintenance man is dirt on lamps and fixtures. Before he can meet this

The first step towards better lighting is to clean dirty walls and ceilings.

Recessed aluminum troffers can be dusted between washings with a vacuum cleaner.

Blower is used in this illustration to rid luminous indirect fixtures of dust.

enemy he must be able to reach the fixtures themselves. A practical way of doing this is to use a large size scaffold complete with outriggers and safety bars. It's adjustable to various heights and is preferred to a ladder since the man on top is safer. A ladder is fine for simply changing lamps, but the scaffold provides room for free movement and space for needed equipment.

Another step in the direction of safety is the disconnecting hanger. The whole lighting fixture is on a pulley that allows it to be raised and lowered to and from the ceiling by a cable on the side wall. When the fixture is lowered the electrical contacts are broken, and the fixture can be washed without any danger of shock.

Cleaning Methods

Now that the maintenance man has reached his goal, what type of fixture does he find? Different types of fixtures require different cleaning techniques. If it is an aluminum troffer his job shouldn't be too hard, because these troffers resist the collection of dirt, and they're designed to present very little area on which dust can collect. Therefore, they need not be washed as often as the conventional suspended fixture; vacuuming suffices between washings. This latter method is convenient since the operator need not leave the floor.

The advantages of aluminum equipment, however, are balanced by the difficulties encountered when giving the unit a complete cleaning. The cleaning compounds and water used for other units will tend to streak aluminum unless the unit is completely dried. Drying is not necessary on other types of equipment, on which the streaks do not show. The use of exact amounts of compound and control of water temperature will probably eliminate the streaks. Special paste-type cleaners can be used on aluminum, but extra time is needed.

Another kind of high quality lighting is the luminous-indirect type. Ninety percent of the light is directed toward the ceiling and then is reflected down to the room and

Picture shows efficient one-hand sponge squeezing technique.

Ganged radiator brushes are rapid way to clean multi-celled lighting fixtures.

Illustrated is time-saving technique for removing excess water from paint brush.

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the other 10 percent goes directly down into the room. Indirect lighting has a tendency to collect dust more readily than other types, but maintenance problems can be solved by using a blower instead of a vacuum to remove dust. Vacuums and blowers help to lengthen the time between fixture washings, but it still is necessary to wash lighting units periodically. Blowers are helpful in removing dust from places that can't be reached with a vacuum tool, but dust removed by the blower is redistributed around the room.

The suspended-type louvered fixture is the kind found most often and is being increasingly used in industrial applications as management has realized that comfortable, efficient lighting in the shop is just as important, if not more so, than good lighting in offices.

Washing Technique

The ideal way to wash a fixture is to have a tank especially designed for the purpose. Two men comprise a crew, though one could do the job if necessary. One man mounts the scaffold and takes down louvers and lamps, handing them to the other man who works at the tank. Tanks differ, but an average one operates something like this: the lamps are placed in holders while the louver is put in the wash section of the tank; the lamps are cleaned first with a sponge dipped in the rinse tank and then put back on the racks to dry; the louver is then cleaned, dipped in the rinse tank, and put up to drain dry. The process is repeated for the next and succeeding louvers. In the meantime, the man on the scaffold is cleaning the reflector and body of the fixture. Instead of a brush or sponge to clean the louvers, some tanks use an air hose to agitate the water. Good results are claimed.

One of the most important maintenance items is the sponge. The two most useful types are a large, flat, soft sponge which fits completely around a lamp; and a small, firm variety. The first is best for all-around work, and the second is much better for cleaning a louver.

The proper sponge squeezing technique is important as a definite time-saver. When the average person squeezes a sponge, he uses both hands to squeeze it slowly, and then moves up to the fixture. The proper technique requires the bucket to be only one-half to two-thirds full of water. Grasp the sponge with one hand, and bring it out of the water, squeezing as you come up. Some pressure can be exerted against the side of the bucket, although you can't press too hard or the bucket slides. If you form the habit of placing your foot against the bottom edge of the bucket it helps prevent sliding. A bit of weight added to the bottom of the bucket is also helpful. Incidentally, oversized buckets will make the job easier. They are less likely to tip over, and they make a better target at which to toss a sponge.

Whether to use warm or cold water is a question on which there is considerable debate. Warm water certainly has a better cleaning action than cold, but it also has a tendency to soften the skin more than cold water. This, of course, makes hands more susceptible to cuts from the sharp edges found on some lighting fixtures.

Louver Cleaning

Cleaning the louver is always something of a problem. The proper type sponge to clean the baffle type of louver is the round firm sponge mentioned earlier. The maintenance man starts his stroke at the outside of the louver and moves the sponge toward himself, cleaning the two inside portions of the louver blade as he goes along. He moves the sponge up over the side of the V center section, down the other side, and then directly towards himself, cleaning the two inside surfaces of the louver blades on the near side. For the second stroke he starts on the side nearest himself and repeats the stroke in reverse. This saves the motion of moving his arm across the louver each time to begin the new stroke. This technique, once learned, will enable him to do a very efficient job in half to three-quarters the time it could be done with a rag or most brushes.

The use of a radiator brush is one way to clean a louver composed of small cells. A brush, made up of 6 or 8 radiator brushes spaced to clean 6 or 8 louver cells with each thrust is a tremendous time saver. These louvers are often cleaned merely by agitation in soapy water. Another use for brushes (paint brushes, this time) is in cleaning dust and dirt around sockets. The important thing to remember in this case is to save time by slapping the brush first against the far side, then against the near side of the bucket, when drawing it out of the cleaning solution. In this way you can move directly to the fixture without a pause to wipe the brush.

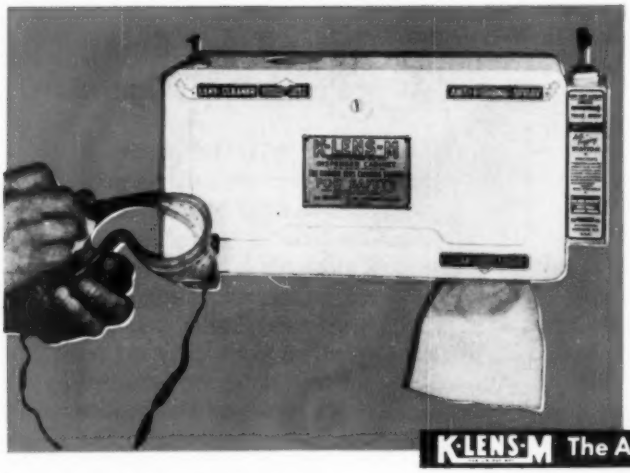
Cleaning Compounds

The type of cleaning solution to use depends primarily on the type of material being cleaned, although the amount of dirt on the fixture must also be considered. In general, the regular household detergents do a pretty fair job of general cleaning. These detergents are especially recommended for plastics. Most plastics require lukewarm or cold water; they should be dipped in the detergent after washing and allowed to drain dry without wiping. Use enough rinse to get the detergent bubbles off the plastic, but no more. Wiping the plastic dry causes an electrostatic charge to be formed on it, and dirt will collect much easier than if it is allowed to drain dry. There are also many commercial destaticizers on the market for treating plastics. Some of these do a better job than the detergent dips. Of course, it's additional work to apply them.

Cleaning synthetic or porcelain enamels, or getting off dirt that is more stubborn than the average, may require something a bit stronger in the way of cleaners. Care should be taken to make sure the chosen cleaner will not harm the finish of the lighting fixture. The new non-ionic detergents should also be mentioned since they show considerable promise for all types of lighting maintenance.

A two-inch paint brush is also a

Every time your workers stop to clear fog from their safety eye wear;
Every time safety goggles are perched uselessly on caps;
Every time a lens is scratched in cleaning;
—It costs you money.



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very handy piece of equipment. A great many fixtures have small crannies that can't be reached with a rag or a sponge—and where dust likes to collect. Best way to do it is with a brush.

The point that should be stressed is that no one piece of equipment is the answer to all cleaning problems. What may be the easiest and fastest type of equipment for one job may be the slowest and hardest way for another. Each lighting fixture has its own individual quirks. It's up to you to sit down and figure out the answer in your particular plant.

Now turn back to the series of illustrations at the beginning of the article for pointers on the proper technique for cleaning lighting fixtures.

This article based on material from "Better Light—Better Sight News." Pictures by courtesy of General Electric Co.

Injury Rates, by Industry, 1952

INJURY rates in manufacturing and in most non-manufacturing industries were lower in 1952 than in the previous year, according to final summaries prepared by the U. S. Department of Labor's Bureau of Labor Statistics.

The manufacturing rate of 14.3 injuries for each million man-hours worked was 8 per cent below the 1951 average of 15.5, and the lowest in the Bureau's 27-year injury-rate series.

About one-half of the non-manufacturing classifications showed decrease of one full frequency-rate point or more between 1951 and 1952. For 27 of the 49 classifications, the decrease in injury-frequency rate amounted to 5 percent or more.

Lumber and wood products recorded the highest average injury-frequency rate among the manufacturing industry groups—49.6. Within this group, the logging industry had a rate of 92.1, sawmills —55.3, integrated saw and planing mills—47.2, and veneer mills—46.9. The lowest rate within this group was 25.8, for plants manufacturing millwork and structural wood products.

Furniture and fixtures industries averaged 21.2 injuries per million man-hours; food and kindred products—20.2; stone, clay, and glass products—19.3; fabricated metal products—18.1; primary metal industries—15.5; paper and allied products—15.3. The averages for other industry groups were below the 14.3 rate for all manufacturing combined. Within each industry group there were wide variations in the injury-frequency rates.

High rates were reported by the beet sugar industry—40.7, boat-building and repairing—40.0, structural clay products—35.3, gray-iron and malleable castings—33.0, nonferrous secondary smelting and refining—32.9, cut-stone and stone products—32.8.

Outstandingly low rates were found in the synthetic fibers industry—1.6, miscellaneous communication equipment—3.2, synthetic rubber—3.3, explosives—3.4, aircraft manufacturing—3.7, rubber footwear—3.8, electric lamps (bulbs)—3.9, radio tubes—4.5, electrical equipment for vehicles—4.7.

Among non-manufacturing industries for which the Bureau compiled data (excluding agriculture, mining, and interstate transportation), the highest injury-frequency rate was reported for stevedoring—87.9. The construction group showed a relatively high average of 34.6; however, this was 12 percent below the 1951 rate of 39.3. Within this group the rate for structural steel erection and ornamental iron work was 46.9; highway and street construction—46.0; general building contractors—38.1; roofing and sheet-metal work 38.0; plastering and lathing—36.8. In the transportation group, warehousing and storage showed a rate of 36.4, and trucking and hauling—36.0.

Outstandingly low rates in non-manufacturing were in the telephone communication industry—1.6; insurance—1.9; banks and other financial agencies—2.0; retail apparel and accessories—3.8; radio broadcasting and television—4.0.

In manufacturing an average of 85 days was lost per case. The injury severity rate was 1.3 days lost or charged because of work injuries for each thousand man-hours worked. In construction an average of 105 days was lost per case and the severity rate was 3.7.

Geiger Tubes Guard Punch Press Operators

AN "ATOMIC" safety device to protect the hands of punch press operators has been installed at the San Francisco maintenance base of United Air Lines. First of its kind for heavy machinery, the device opens a new field of industrial safety, according to company engineers.

Operators of the "accident-proof" punch press wear wristbands containing radio-active crystals. Three Geiger tubes enclose the punching area —one at the front and one on each side of the zone where injuries can occur. If hands stray into danger, the tubes pick up radiation from the wristbands and instantly halt the machine. The device is so sensitive that it can stop the punch in mid-stroke.

As a further safety measure, the punch press will not run unless the operator is equipped with the wristbands. An impulse from the radio-active crystals is required to trigger the machine for use. Within 15 seconds after the wristbands are withdrawn, the machine automatically shuts off. The bands are harmless to wearers.

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Tough, flexible, rough-textured natural rubber, bonded to sturdy white fabric lining, gives positive non-slip grip, wet or dry. Outwear ordinary canvas gloves up to 10 times. Far safer, too.

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Edmont job-fitted gloves

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(For further details, use Key # N-15 on free Inquiry Card on page 71)

Handbook Published On Asbestos Textiles

"HANDBOOK OF ASBESTOS TEXTILES" is the title of an 84-page booklet just published by the Asbestos Textile Institute, an association of manufacturers of asbestos textile products. It is intended primarily as a source of useful information about these products and the characteristics which have adapted them to a large and constantly expanding number of diversified uses.

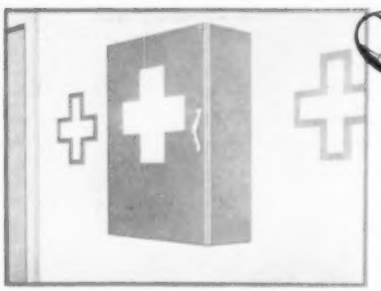
The first pages of the handbook are devoted to the mineral asbestos —its origin and major properties— with emphasis on the particular types suitable for textile manufacture. This is followed by sections describing the mining, milling and grading of asbestos fibers for textile purposes, and the various processing steps by which the "opened" fibers are converted into finished textile products.

The major section covers the products and their applications. It includes a description of each product and points out such advantages as incombustibility, high tensile strength, resistance to rot and decay, thermal stability and other properties that are inherent in the inorganic asbestos fibers of which it is made. Then follows a list of representative uses and information about styles, textures, weaves, sizes, grades, standard packages, etc. A total of 12 asbestos textile products, including roving, yarn, thread, rope, cord, tape, tubing and cloth are covered in this manner.

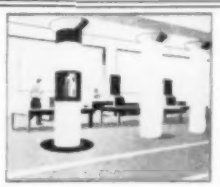
The handbook also contains a section giving the A.S.T.M. specifications and methods of test used for asbestos textiles, as well as a handy glossary of terms. It is illustrated with many photographs and drawings.

Copies are available from any of the member companies of the Institute or by writing to Dr. Myril C. Shaw, Asbestos Textile Institute, School of Ceramics, Rutgers University, New Brunswick, New Jersey, on a company letter-head.

Choose The Right Color For the Job



The first-aid color—locates first-aid rooms, equipment, and stretchers.



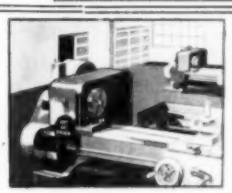
The fire-protection color—identifies fire-fighting equipment.

By N. A. MASON
Manager
Maintenance Painter Sales
Pittsburgh Plate Glass Company
Pittsburgh, Pa.

WHAT is color dynamics and how can it be classified as a safety tool? In the first place color dynamics like aerodynamics is a science. It is the science of putting color to work in the form of a specific force. Since color as we see it is exclusively a response of the human observer, it produces a psychological reaction to the stimulation. This psychological and somewhat physiological reaction within the human observer to color is directly associated with the end results we are after—we want to use color as a safety tool. Color is also subjective, and therefore a personal response to a mental sensation. With this in mind it is necessary for us to consider the entire environment of the worker if we are to understand how color can be used as a tool in the safety program.

The warning color—for overhead, strike against and stumbling hazards.

Until the advent of color as a psychological force during the early months of World War II, most industrial engineers, responsible for the maintenance of the physical plant, were primarily interested in paint as a protective coating. As a result of this thinking, machines and machine tools were finished at the factory with varying shades of gray gloss enamel. The dark color very effectively camouflaged the dirt and grease accumulation from day to day, and the high gloss finish prevented oil absorption and made machine cleaning comparatively easy. The operator of the machine was never considered, nor was the work environment in which the machine was located. This attitude would be considered sound and acceptable, provided all machines were completely automatic and did not require the attention of a human being in order to secure maximum production.

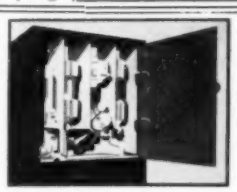


The caution color—for machinery repair and equipment not to be moved.

Considering the other influencing factors related to the work environment, most ceilings, and side walls down to contact height, were painted white in order to secure maximum light reflection. The contact area—doors, trim, and wainscot—were painted in a dark color so as to camouflage dirt, grease, smudges, etc. This act often minimized any ineffectiveness in housekeeping, but did not contribute to a healthy or safe work environment. The average American worker of today does not tolerate such working conditions.

The zone marking color—marks storage areas, traffic flow, etc.

In order to evaluate color as an environment factor, and its relation to safety, let's prepare a typical case history. Suppose we have a large plant engaged in machine tool work, such as milling parts for a complicated machine. The ceiling and upper walls are white, the wainscot, doors and trim dark gray, and the machines in standard machine tool gray. The lighting is good, delivering 25 foot-candles at the work level. The machines are arranged in rows parallel to the walls, and the operators are facing the wall.



The on-guard color—identifies gears, cutting edges, and trucks.

Since the task requires visual acuity, let's examine the work conditions as related to seeing conditions, eye fatigue, nervous tension, absenteeism, production quality and quantity, and safety. We'll deal with visual comfort first. The light reflectance of the dark gray machine color is about 5 percent.

That is, 5 percent of the light striking the surface adjacent to the visual task is reflected, or only 1/20th of the available light for seeing reaches the eye. Naturally, this condition requires concentrated seeing effort at the point the machine work is done. Working under such visual strain the worker must look up from the task occasionally in order to rest the eyes. As he does the white wall becomes the focal point. The amount of light reflected from the white wall is approximately 85 percent of that striking the surface. In comparison to the task, the ratio of brightness is 5 to 85 or 1 to 17. The brightness contrast is so great, eye adjustment is necessary before good visual acuity is secured. The eye muscles must reduce the size of the eye pupil in order to adjust the amount of light entering the eye as the worker shifts the eyes from the task to the wall. As the eye returns to the task, a reverse reaction takes place within the eye. You can appreciate the terrific effect such an adjustment would have on a person hour after hour, and day after day. Eye fatigue and nervous tension are sure to develop, and as this reaction increases, the operator leaves the job for a few minutes, production slows down, and under this physical strain the worker is more susceptible to an accident.

Correction Colors

How can we correct this condition with color, and not adversely affect the fixed factors of machine placement, and the level of illumination —both cost factors within an operation? Think first of the proper brightness ratio, between the task, the immediate surroundings, and the general field of vision. Experts in illuminating agree, the brightness ratio within the field of vision must be confined to narrow limits for seeing comfort. A ratio of 1 to 3 or less is desirable, although some persons can tolerate 1 to 10 if the level of illumination is very high.

Now, let's turn back to the machine. By painting the machine body in a color that is known to be easy on the eye, we take advantage of chromatic aberration within the eye. This known color is grayed yellow green with a light reflection factor of about 25 percent. By selecting it we immediately provide an easy-on-the-eye surrounding to the task. The focal wall in this case can also be painted with a color in the yellow green family; however, we increase the saturation and brightness in comparison to the machine color. For this wall we select a color we call seafoam green light with a light reflection factor of 70 percent. Our brightness ratio between the task, and focal wall is now 25 to 70 or less than 1 to 3. Also we are increasing the amount of reflected light from the machines, thereby providing a better uniformity of light within the entire environment.

Under these conditions extreme eye adjustment demanded by the gray and white color environment is eliminated. The worker has added eye comfort and less cause for nervous tension. Absenteeism from the job is reduced to a minimum as work conditions become more pleasant. Also safety has been assured.

Other color facts may also be employed to further improve the working conditions and make the operator's task easier and more comfortable. For example: The operator performing a milling task must concentrate at the point where the cutting tool is in contact with the material being fabricated. In order to hold the worker's attention at this point, with minimum eye fatigue and discomfort, employ the rule of color contrast. Paint that part of the machine holding the cutting tool a focal color. The color may be focal ivory or focal buff. Both colors afford good color contrast between the material and machine color. Thinking of brightness contrast again, let's consider the light reflectance of the various reflecting surfaces. The focal ivory reflects 74 percent of the light, and the focal buff 55 percent in contrast to the machine body color of 25 percent. These are good brightness ratios and the color contrast holds the operator's attention to the point of contact without discomfort or eye fatigue.

Going a step further with the color contrast principle, the adjustment wheels or levers, constantly in use during the milling operation can be made easier to see and find without concentrating on the task, if a color such as focal beige, a warm color, for contrast with the immediate surroundings is used. Also by using an alerting color, such as focal orange on the emergency stop button we improve safety.

Safety Colors

Crushing and cutting hazards contribute a good portion of normal plant accidents. Machines, or operations responsible for accidents of this type, can be effectively color coded to attract and hold attention to the danger. In some plants fire extinguisher locations are not easily located simply because the red bands around posts, for example, blend in with other natural lines and planes. Requests have been made for a color coding that could be applied to tell the user the kind of fire each extinguisher type was assigned. Fire in most instances develops panic within the individual, and under the circumstances, color codes might not be forceful enough to assure proper equipment selection. Nothing should be left to chance—identify each piece of equipment by stenciling on the location panel and on the equipment itself, the type of fire it is to be used to combat. It is also common practice in some plants to completely paint the soda-acid type extinguisher a fire red color. This creates an additional hazard by painting over the welded seam common to most extinguishers of this type. The paint may camouflage, or hide, a weakness in the seam, and as it is put into use, the inside pressure may cause an explosion. Cases of this type are on record.

Perhaps the two most important factors related to color codes for the identification of safety hazards are: educating all personnel to their proper meaning, and limiting their use to the safety program. Various

(For further details, use Key # N-10 on free Inquiry Card on page 71)

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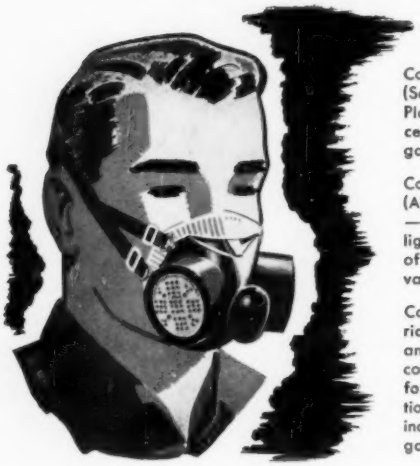
STAY FRESH

wear a **DUPOR No. 10**

Chemical Cartridge Respirator



Code "A" Cartridges (Soda Lime)—White Plastic for light concentrations of inorganic acid gases.

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Sample sent $5.00 *up*

Extra Cartridges 70¢ a set

Unit has DUPOR "controlled-breathing" valves. Double filter apertures hold 50cc. capacity chemical cartridges. Soft rubber face mask gives gas-tight fit on any shape face, as well as panorama view with no blind spots. Chemical filters are packed in colored plastic cartridges that will not corrode like metal ones or crush like paper types. Unit is shipped with code "B" cartridge unless otherwise specified.

For the best in eye protection get H. S. Cover's Gas-Tight, Fog-Proof Goggles ..... *$2.00 pp*

H. S. COVER, South Bend, Ind.

(For further details, use Key # N-50 on free Inquiry Card on page 71)

JUSTRITE SAFETY CANS guard against danger more ways!

New bright Flame Red color; highly visible. Cannot be confused with fire fighting equipment. Self aligning cover and cover spring are mounted on heavy cast spout. Pouring Lip on spout permits pouring small stream. Bodies are ribbed for extra strength. Even if can is wrapped in flames, seams remain tight. Exclusive Swing Handle on 2, 3 and 5 gal. cans for easy pouring.

WRITE FOR CATALOG—Dept. SMP

APPROVED, Inspected and Individually labeled and numbered by Underwriters' Laboratories, Inc.

APPROVED by the Associated Factory Mutual Fire Insurance Companies and so stamped.

APPROVED by New York City Fire Dept. Approval No. 92.

JUSTRITE MANUFACTURING CO.
2061 N. Southport Ave. • Chicago 14, Ill.

LONGEST LIFE BEST VALUE

(For further details, use Key # N-16 on free Inquiry Card on page 71)

methods have been used very successfully over the years. Some time ago a unique approach to the education problem came to my attention—call it the indirect psychological approach. A series of 3 letters was used; each one sent to the worker's home, and addressed to the wife, husband, or mother. The first letter pointed out the importance of safety on the job in relation to the security of the people concerned. The second contained a detailed explanation of the plant's standard safety color code. The third pointed out the importance of the worker knowing the exact meaning of the code and solicited help from the home in seeing that it was understood and recognized instantly.

Consider that unimportant looking can of paint in the maintenance paint shop. Think of the two very important values it contains, protection for objects and surfaces against the destructive forces of corrosion—and **COLOR**—for beauty and safety for people.

From an address delivered at the 23rd Annual New York Safety Convention.

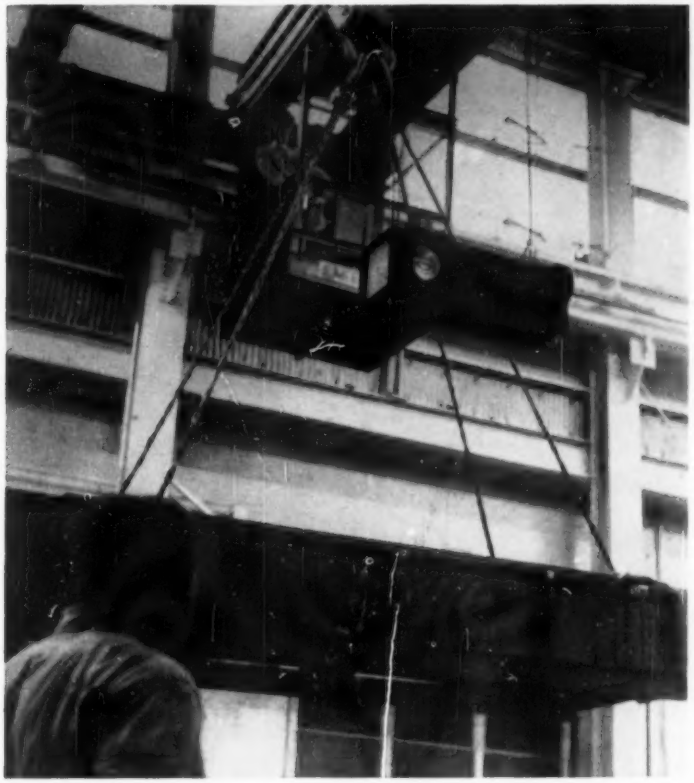
Pictures by courtesy of Pittsburgh Plate Glass Co.

Sixth Engineering Institute

THE Sixth Annual Industrial Engineering Institute of the University of California will be held in Berkeley on January 29 and 30 and in Los Angeles on February 1 and 2, 1954. The purpose of this annual conference according to Professor Bruce G. McCauley, General Chairman of the Institute, is to present fundamentals and recent practical applications in the field of industrial engineering and management, as well as the results of industrial engineering research performed at the University and throughout the country.

Further details may be obtained from Prof. Bruce G. McCauley, College of Engineering, Mechanical Engineering, Berkeley 4, Calif.

"SAFETY MAINTENANCE" Salutes a Safety Idea



Craneway Traffic Lights Promote Plant Safety

THERE'S little chance that Standard Pressed Steel's 15-ton steel-handling crane will lower the boom on an unsuspecting employee.

Red traffic lights—similar to the type used at railway crossings—now flash a warning whenever the overhead crane approaches heavily traveled cross-aisles.

Concerned lest a misplaced load land on an unwary passerby, the Jenkintown, Pa. firm installed sets of photo-electric eyes to keep watch over each cross-aisle. These "eyes" are connected to blinker type warning lights—one suspended over each intersection at a height of 12 feet. Now when the crane comes within 20 feet of the centerline of an aisle, it interrupts a photoelectric beam. The red lights in the "danger" aisle immediately start blinking—and continue to flash their warning until the overhead crane has safely passed.

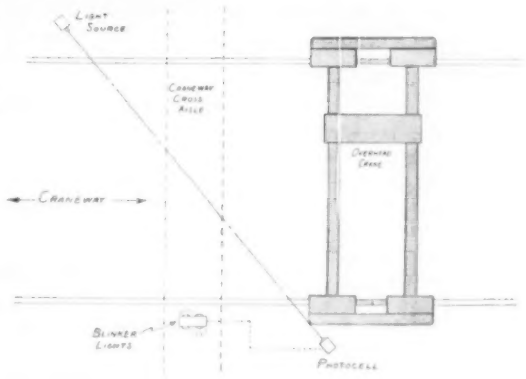
Used as Warning

Actually, cross traffic does not come to a halt when the red lights start flashing. There's no immediate danger in having a crane moving overhead. But the lights do warn pedestrians to be on their toes—to keep their eyes open and their heads low.

The protected craneway—in which the company stores steel bar and coil stock to be made into screws and locknuts—extends for 335 feet through the receiving end of the plant. The three cross-aisles are each ten feet wide.

The new warning system, a plant-made device, cost less than $250 per aisle—the cost of the photocell units, the traffic light and the necessary controls and wiring.

Pictures by courtesy of Standard Press Steel Company.



When a craneload nears a cross aisle at this plant (in picture at upper left), blinking red traffic lights warn employees to keep their eyes open and their heads low.

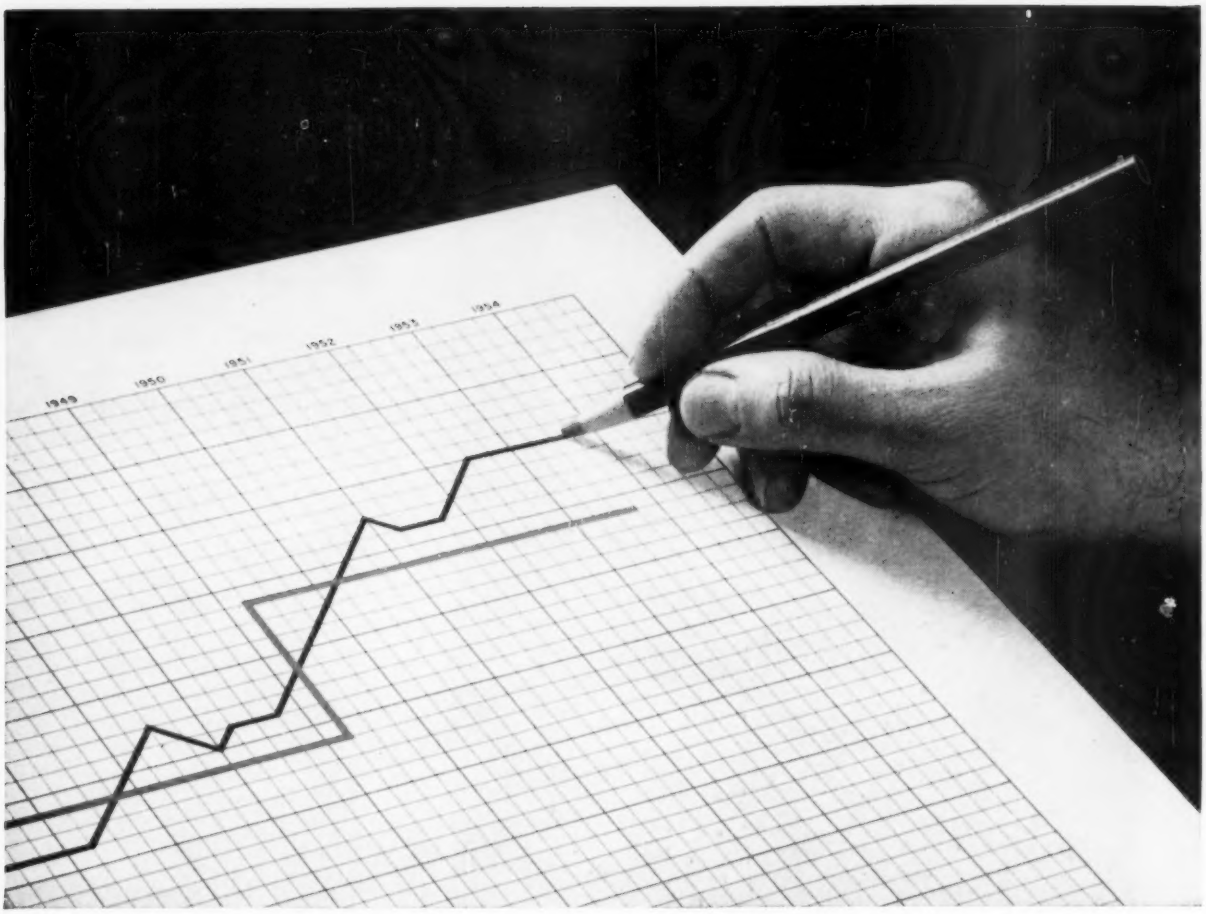
Figure at left illustrates how lights are automatically flashed on by photoelectric eye whenever the overhead crane comes within 20 feet of an aisle. Cost of this effective home-made safety device is low and confined to cost of photo-cell unit, traffic light and necessary controls and wiring.

Pallet Packages

(Continued from page 20)

Although the art of proper packaging is distinct from materials handling, it has, nevertheless, in recent years become closely allied with it due to the rapid advancement of handling methods. Better packaging will promote better handling and, conversely, better handling will promote better packaging. In our company, the materials handling division works very closely with the packaging divisions of the production and purchasing departments in a constant effort to lower costs through adoption of better methods.

Picture credits: Storage Battery Division Thomas A. Edison, Inc.
lower right: National Biscuit Co.



Caution: dangerous curves

Keeping your fire protection properly balanced with changes in processes as well as ups and downs in production is vital to efficient, profitable operation.

You'll find your best answer to this serious fire problem which is currently confronting industry by installing an expansible, fully approved C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing System. Simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Changes in your fire protection requirements are easily and economically provided for with a C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing System by initially installing an oversized storage tank and adding where necessary the supplementary discharge facilities at a later date.

Flexibility is the keynote . . . the low pressure carbon dioxide storage tanks range in capacity from one to fifty tons . . . discharge facilities can be either manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these . . . especially installed to fit your particular needs.

WHEN BUSINESS STOPS . . . INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today... our extensive experience over the years is at your disposal without obligation. Get the facts now!

C-O-TWO

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1 • NEW JERSEY

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Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY

(For further details, use Key # N-17 on free Inquiry Card on page 71)

The Fire Front

New Fire Hose Material Is Light and Tough

LIGHTWEIGHT, durable fire hose constructed with an outer jacket of 100 percent Dacron polyester fiber promises to make firefighting a safer, easier job for firemen in the near future. Firefighters will also have the opportunity to use a new kind of hose made of a blend of cotton and Dacron.

Indeed, many fire departments are already using fire hose made with an outer jacket constructed of a cotton warp and a filling of the new fiber. Among cities using the new hose, are Houston, Tex.; St. Louis, Mo.; Niagara Falls, N. Y.; Jersey City, N. J.; Auburn, N. Y.; Wellesley, Mass.; Watertown, Mass.; Toronto, Regina, Canada; Jamestown, N. Y.; Chicago, Ill.; Saskatoon, Canada; Moncton, New Brunswick, Canada; and Runnemede, N. J.

Advantages of fire hose made with the polyester fiber, developed by Du Pont, include lighter weight, making the hose easier to handle both on and off the fire truck; longer wear, meaning less replacement cost; and greater flexibility, permitting more feet of hose to be carried on a truck and saving loading time in racking, coiling, and uncoiling.

Hose constructed with an outer jacket of 100 percent Dacron, will resist mildew—an important feature in fire hose. Great precautions must be taken with hose jacketed in conventional fibers to make sure it is completely dried after use. The polyester fiber, which has a negligible water pick-up, does not require such extensive and time-consuming care.

On a pound-for-pound basis the fiber is twice as strong as the conventional fiber used in fire hose. However, most hose is built to specification to withstand certain burst tests at certain water pressures. Therefore, a new hose comparable in strength to a conventional hose is many pounds lighter.

In a demonstration compact "miniature" fire engine smothers oil fire in less than 2 minutes, while fire experts look on.

Miniature Fire Trucks Now Used By Navy

THE use of "miniature" fire trucks at several naval bases and air stations in this country and abroad is disclosed by the Navy Bureau of Aeronautics.

The chief advantage of the new experimental fire engine is its ability to negotiate rough terrain to fight forest and brush fires. Nicknamed the "Ranger," it can also be used in the place of the larger, standard "pumper" at outlying bases where it would be uneconomical to assign a major fire truck.

The new fire-fighting miniature is capable of pumping 500 gallons of water a minute at a pressure of 120 pounds per square inch. Its "booster" tank carries 150 gallons of water.

About half the size of the standard Navy fire trucks in use today, the new vehicle is being tried out as a replacement at bases where buildings are few, and as auxiliary equipment at large naval installations. It is expected to prove more maneuverable than present-day equipment in fighting fires at close quarters.

In preliminary tests in a temperature of 100 degrees, the fire truck extinguished 4 separate fires in less than 2 minutes. A 5-man crew used fog and water to put out gas and oil fires before an audience of government and municipal fire prevention experts.

With one man operating the pump, two pairs of firemen simultaneously attacked an open pit and a tank, each ablaze with 2000 gallons of oil. After quickly smothering these blazes using fog and water, one pair then turned to a burning wall filled with oil-soaked excelsior, while the other rushed into a smoke-filled two-story building. All 4 fires were out in less than 2 minutes.

The truck also maneuvered up and down a 30 percent slope marked with deep ruts and rocks.

Picture by courtesy of Willys Motors, Inc.

Built-In Fire Safety

AN OBJECT lesson in built-in fire resistant construction is offered to all industrial firms building new plants in suburban or rural areas by an ultra-modern $750,000

Asbestos Gloves for HOT Jobs

Industrial
No. 200-14

To be sure of the Genuine Demand this Trade Mark

There's a *Big* difference between Asbestos Gloves and you can *tell* the difference when you get Industrial's No. 200-14 asbestos gloves. *The quality stands out* in your hands and *on* your hands. Seamless one piece construction from tip to top. No seams at the wrist or working edges to pull out or burn out just when protection is needed most on a hot job. Made lined or unlined. Standard lining is an 8 ounce knitted cotton material anchored in each finger and thumb. Knitted wool or industrial wool lining on request. *The quality stands out* in the correct design and proportions of the big roomy pattern that allow a cool, comfortable fit. Double sewn throughout. Standard 11, 14 and 23 inch lengths. Other lengths and many special types of asbestos gloves and mittens are available both plain and leather reinforced. The quality of all these items stands out because they are all made of sturdy, close woven 2½ pound per square yard Underwriters grade Asbestos cloth.

Be safe—use Industrial's Safety Apparel backed by more than 40 years of experience and know-how that means dependable low cost protection for rough, tough service.

We are designers and manufacturers of a complete line of Industrial Safety Apparel. Write for catalog and tell us your requirements.

INDUSTRIAL GLOVES COMPANY
A CORPORATION
Main Factory: 1750 Garfield St.
DANVILLE, ILLINOIS
(In Canada: SAFETY SUPPLY CO., Toronto)
(Use Key # N-18 on Inquiry Card on page 71)

plant to be opened in St. Charles, Ill., by Bert Mills Corporation, a leading manufacturer of automatic coffee vending machines.

The firm's insurance advisors were called in by Mills officials at the initial planning stage for the new building. The result is a fire-safe plant and minimum fire insurance rates for a factory structure in a rural area.

Main safety feature of the giant plant is a single-piece, 40,000 square foot roof of poured concrete. Supported by concrete columns, the roof will not give way even under the intense heat that buckles steel girders.

Bert Mills, company president, disclosed that this type construction added about 35 per cent to the building's roof construction costs, but said "it is well worth the investment if it means we can save machinery, stock, and most important, lives."

Confronted with limited fire protection facilities in the suburban area, insurance officials advised building firewall sections between plant and offices, and made recommendations on water well and pump placement, and a number of other housing placement, fire hydrant fire protection features. Other built-in fire protection features include firewalls around the paint spray and paint storage areas, and automatic sprinkler systems in those departments. The firm dug its own water wells to assure water supply at all times. Two fire hydrants have been placed on diagonal corners of the building, and an employee fire brigade is trained to go into action the instant fire is discovered.

Poor Maintenance Causes Most Supermarket Fires

ACCORDING to John A. Neale, chief engineer of the National Board of Fire Underwriters, most supermarket fires are caused by poorly-maintained refrigeration equipment. Motors are often neglected, he said, and lint, dust, and oil accumulate on them, preventing proper dissipation of heat.

Mr. Neale, who spoke at a session of the Supermarket Institute, said there is a sameness in fire reports on supermarket fires that is striking and makes analysis of the problem very simple. He explained how fire starts in the service section, burns undetected while the store is closed and because of windowless walls, goes unnoticed by the passer-by, until the fire breaks through the roof.

"In one way or another, refrigeration equipment has been one of the greatest fire causes in supermarkets. Poor maintenance is mainly responsible. Motors are often neglected and lint, dust and oil accumulate on them, preventing proper dissipation of heat. Overheated motors often ignite this residue or ignite combustible material that is carelessly placed in contact with, or close to, the motor. Some motors overheat when refrigeration cooling coils are permitted to get dirty and clog up. In other cases, slipping drive belts create sufficient friction to start fires. Some troubles occur when bearings overheat from lack of lubrication. Isolation of this common source of fire would no doubt be instrumental in saving many supermarkets."

He observed that smoking by employees in the utility section is another cause of fire. "Discarded or forgotten cigarettes are believed responsible for a number of large fires," he said.

Other causes are faulty incinerators, air-conditioning systems that spread fire and smoke from the utility area, unsatisfactory handling of combustible refuse, tampering with electrical wiring, and lack of proper employee education in fire protection.

In conclusion, Mr. Neale said that the only real protection for the huge supermarket of combustible or mostly combustible construction is automatic sprinklers. "A standard complete system of automatic sprinklers, while not eliminating the need for safe-guarding hazards, nevertheless reduces the seriousness of large combustible areas and lessens the potency of the various fire hazards."

October Fire Losses

ESTIMATED fire losses in the United States during October amounted to $68,551,000, according to the National Board of Fire Underwriters.

According to Lewis A. Vincent, NBFU's general manager, this $68,551,000 loss represents an increase of 7.2 per cent over losses of $63,958,000 reported for October, 1952, and a decrease of 0.1 per cent from losses of $68,613,000 for September (1953).

Losses for the first ten months of 1953 now total $751,896,000 an increase of 16.4 per cent over the first ten months of 1952, when they amounted to $645,697,000.

These estimated losses include an allowance for uninsured and unreported losses.

Non-Flammable Fluids Check Fire Intensity

OVER-ENTHUSIASM in striving to achieve greater mass production techniques may be leading industry to overlook certain facets of new methods which could wipe out years of progress.

James Robinson, chief engineer for Vickers, Inc., in an address before the National Conference on Industrial Hydraulics said, "in the race for increased mass production, American industry has been inclined to "overlook the fact that new techniques in production may necessitate the use of certain materials which could, should one slight accident occur, cause a chain reaction of other accidents that could be disastrous."

He pointed out that industrial fires have been more intense with hydraulic oils to feed the flames, and emphasized that the use of synthetic nonflammable fluids would certainly have decreased this intensity.

The effect today of nonflammable fluids in machine tools has shown remarkable results, he concluded.

Whether you have a new concrete floor or are refinishing an old one, the Multi-Clean Method is fast and economical. It fortifies concrete against abrasion and the devastating effects of excessive water, grease, oils, alkali, soaps and other chemicals. It prevents concrete dusting, pitting and chipping . . . gives you a hardened, completely sealed floor in a wide range of permanent non-fading colors and natural. You'll get better service and greater safety with added beauty and longer life from your concrete flooring when you use The Multi-Clean Method.

MULTI-CLEAN cuts hours off maintenance time!

The Multi-Clean Method saves many hours of floor maintenance time. Sweeping is easier, more effective and wet moppings become less frequent. Periodic steel wool buffing loosens stubborn dirt and restores the finish.

IT'S ALL EXPLAINED

Every floor care problem is answered in this 44-page handbook, packed with valuable information about floors and how to maintain them for lasting results and at lower costs.

WRITE TODAY FOR YOUR COPY!

MULTI-CLEAN®
PRODUCTS, INC.

2277 Ford Parkway — St. Paul 1, Minnesota

MAIL COUPON TODAY!

Multi-Clean Products, Inc.
2277 Ford Parkway, Dept. SP-1, St. Paul 1, Minn.

Gentlemen: I would like this handbook and information on: ☐ Floor Machine; ☐ Floor Scrubber; ☐ Vacuum Cleaner. I'm interested in The Multi-Clean Method for: ☐ Concrete Floors; ..... Floors.

Name _____

Address _____

City _____ Zone ____ State _____

SEE MULTI-CLEAN IN ACTION—PLANT MAINTENANCE SHOW—BOOTH 1013

(For further details, use Key # N-21 on free Inquiry Card on page 71)

WHY ...WHEN M

By GEORGE G. BLAIR
Fire Prevention Engineer
Ebasco International Corp.
New York City, N. Y.

FIRE protection involves fire prevention, fire control, and extinguishment. Intelligent maintenance makes an enormous contribution to each of these areas of fire protection.

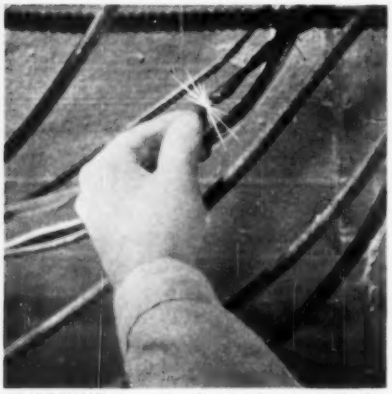
Fire control and extinguishment, to be effective, require good maintenance of buildings and equipment. By fire control is meant burning out the point of origin, without permitting spread beyond the limited area involved. Under ideal conditions of control there can never be total destruction of a plant; and, in fact, there should not be a large loss by fire. By proper spacing of buildings, sub-division and segregation by fire walls, and adequate protection of vertical openings in fire resistive buildings, and by proper design in new buildings a total loss possibility can be reduced to a much smaller loss possibility. Good design characteristics must be maintained, and less favorable situations not worsened. Frame additions to masonry buildings, to take a horrible example, increase fire hazards tremendously. Similar potentials are created whenever any inferior addition is added to a fire-resistive structure.

Care should be exercised to maintain proper clearances between buildings. Fire walls should remain unpierced, or if openings are necessary, the effectiveness of the wall should be maintained by providing proper approved automatic or self-closing fire doors or shutters. Any pipe holes should be cemented or bricked up tight around the pipe. Occupancy changes may lead to serious exposures. When a building has been erected specifically for a certain process, a change in the use of the area may lead to a serious fire. This is especially true if less-than-fire-resistive construction was employed because original plans contemplated the storage or processing of material of a non-combustible nature, and were later changed to a more dangerous storage or use. Such a change may produce drastic modifications in fire safety. First, to maintain fire control features it may be necessary to install automatic sprinklers when the occupancy adds combustibles. Then, if a vapor or dust condition is created, other necessary revisions could include a complete change in the electrical components to meet code requirements for dusty or explosive atmospheres. If grinding or breaking of an incombustible material is changed to such an operation performed on combustible stock, magnetic protection should be required ahead of any grinder.

Certain new fire walls or partitions may be advisable to segregate features of an occupancy changed to a more hazardous classification, and if the section happens to be sprinklered, increased water requirements may result. A large part of the maintenance of fire protection

ENFORCE "no smoking" rules! Don't just put up signs and forget about it.

HAVE A FIRE?



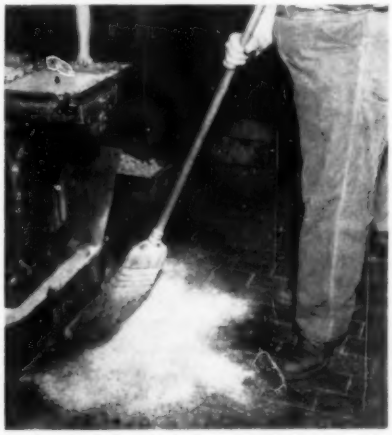
CHECK UP on your electrical wiring. Faulty installation or wear invite fire.

CLEAN UP any waste, debris or mess. Orderliness is next to fire prevention!

PROTECT area while welding with flame-proof tarpaulin. Keep extinguisher handy.

AINTENANCE CAN PREVENT IT!

CHECK UP on your motors. Different maintenance devices help reduce hazard.



CLEAN UP floors. Use oil absorbent material to rid floors of flammables.

PROTECT plant by isolating workers' dressing room from plant working area.

CHECK UP on fire fighting equipment, to be sure it will work in an emergency.

CLEAN UP dust from rafters, where it presents unseen fire hazard, with vacuum.

PROTECT temporarily fire hazardous areas by adding movable fire partitions.

for the effective cleaning and degreasing

of ELECTRIC MOTORS · POWER GENERATORS · CONDENSORS and COILS · STARTERS · PRODUCTION EQUIPMENT · AIR CONDITIONING MOTORS, etc., and all areas in the plant where greasy, oily dirt has to be removed.

REPLACE CARBON TETRA-CHLORIDE use . . . **FINE ORGANICS**

'SAFE-TEE' SOLVENT

F.O.-128

and AVOID THESE HARMFUL EFFECTS ON PERSONNEL

nausea, vomiting, abdominal cramps, headaches, dizziness, jaundice, loss of memory

and the more harmful effects on the lungs and the liver.

ADVANTAGES OF F.O.-128

1. High flash point makes the use of this solvent desirable wherever fire hazards prevail.
2. Grease and oil removed without damage to surfaces.
3. Minimized toxicity — 15 times more safe than carbon tetrachloride.
4. Zero residue on drying.
5. Can be used as spray.
6. Recommended by Safety Engineers and Industrial Hygienists.

ORDER 53 gal. DRUM at 1.44 per gal.

Write for information on our other Safe-Tee Solvents—and the name of your nearest F.O. representative.

Ask for our Technical Bulletin "How To Clean Electric Motors".

FINE ORGANICS, inc.
211b East 19th Street
New York 3, N. Y.

(Use Key # N-20 on Inquiry Card on page 71)

consists of vigilance in maintaining the integrity of existing structures, segregation, and occupancy.

Fire-Fighting Equipment

As in the case of any other type of equipment, fire protection devices need reasonable care. The best equipment can be rendered useless by poor maintenance. Since fire equipment is strictly for emergency use, it should be maintained in constant readiness. Inspection, testing and training in use are essential to proper performance when emergency arises. Thorough inspection should be made, preferably weekly, and no less than monthly.

Where equipment is extensive, such as at locations with sprinkler and outside yard hydrant systems, a self-inspection form should be completed and filed through definite supervisory channels. Forms are frequently designed to fit the individual risk or plant, but various sources offer general fire protection inspection blanks. In some cases, such forms are a requirement of underwriters, either on a weekly, biweekly, or monthly basis. These inspections should be made at stated times regardless of any inspections by the interested underwriters. In addition it is well to plan to have alternate inspections by various fire brigade members, although the normal procedure is to choose inspectors with some mechanical knowledge.

Most frequent inspection with testing is that accorded automatic sprinklers and private water supply systems. It is most important that all normally open control valves be checked to see that they are open and accessible, and they should be operated their full gate travel distance occasionally to make certain of their operative condition. Where sprinklers subject to freezing are served by dry pipe valves, air pressure must be checked regularly, at least weekly, at which time the alarms should also be tested.

Wet pipe sprinkler alarm valves should also be tested at short intervals, although it is best not to run water through hydraulically operated alarms during freezing weather. Make sure that no sprinklers are missing or disconnected, or obstructed by stock or structural alterations. Note for remedial attention any heads loaded with dust or other deposit, or any corroded heads or pipe such as is caused by ammonia exposure or acid mist. Provide wire guards for heads subject to mechanical injury.

Fire pumps should be brought up to speed and pressure weekly, at which time make certain that any priming tanks are full. Gravity tanks and reservoirs are to be kept full and in cold weather the functioning of the heating system should be checked. It would be advisable to check the latter well before the advent of cold weather. Flushing and cleaning should be performed as required.

Hydrants should be checked in spring and fall by opening the valve and flushing, then being certain that the barrel drains when the valve is shut. Lubricate hose thread caps, if necessary. Check the condition of hose and try to use all cotton rubber-lined hose in rotation semi-annually at practice sessions, thoroughly drying and reracking the hose. Linen hose should not be used except at a fire or for testing if its condition appears doubtful. Before reinstalling, it must be dried carefully, as dampness rots this type of hose. See that auxiliary equipment is in the hose houses and replace or repair any damage. Standpipe valves should be checked to make certain water is not leaking into the attached hose, and "attached" the hose should be!

Extinguishers should be in their proper places, readily accessible. Occasionally after recharging, each extinguisher station has an extinguisher but careless interchange of types may be actually removing protection from two areas and creating a hazard as well; if, for instance, a conductive stream extinguisher be used in haste at an electrical hazard, or an attempt be made to use a gas type extinguisher on a fast Class A fire, an added danger is certain.

General conditions, including hose and nozzle condition, should be ascertained at each inspection, and a complete examination, including discharge, refilling, and cleaning of soda-acid and foam extinguishers should be an annual practice. At such times carbon dioxide extinguishers and the gas cartridges in the various gas-operated extinguishers should be weighed to check the charge of gas, and the solution or powder should be examined to test its amount and condition. Pump type extinguishers require a few strokes of the pump.

Of course the fire brigade (including watchmen) should maintain its efficiency by practicing with the various protective devices provided. It is also advisable, however, to have all employees familiar with the "first-aid" or hand extinguishers, office help as well as plant force. The annual recharging period presents an excellent opportunity to demonstrate correct use of the various types of extinguishers. Permit other personnel to try the extinguishers located at or near their respective work stations. Much of the value of annual recharging is lost if extinguishers are merely dumped and recharged or if recharging is done elsewhere in the plant.

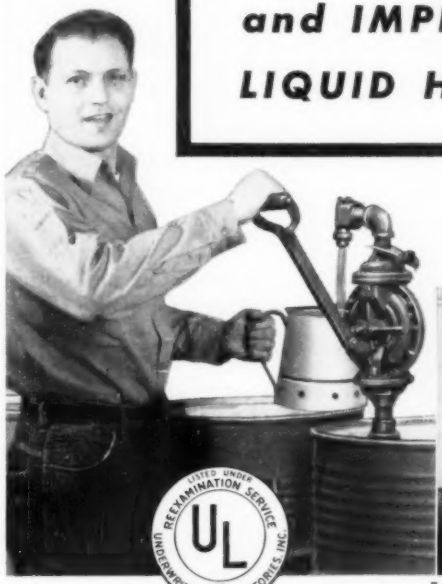
When in doubt as to the use of an extinguisher, and certainly before it is needed, do not forget that brief instructions for use as well as for recharging appear on the label of every hand-operated extinguisher. These instructions should be a required one minute reading course for everyone in the vicinity of the extinguisher.

Fire Preventive Maintenance

Prevention through the elimination of fire causes is perhaps the easiest method of damage reduction, but there are innumerable conditions and remedies requiring constant watchfulness.

Hazardous materials should be kept in their proper segregated storage areas and brought out for use only as needed to meet requirements. To facilitate operations a

"We chose
TOKHEIM PUMPS
and IMPROVED OUR
LIQUID HANDLING!"



For filling oil coolant reservoirs directly from drums

You'll find it pays to standardize on TOKHEIMS. These double-action hand pumps have no equal for fast, easy, safe handling of liquids. Stop wasteful, dangerous dripping and slippery floors. Reduce fire hazard and accidents common to other methods of transfer. Save on drum storage space. More useful—available with optional parts to handle a wide variety of products. UL-approved for petroleum liquids. Available in hose and spout models—for drums, skid tanks and underground installations. Call your dealer, your Tokheim representative, or write the factory for descriptive literature.

For refueling lift trucks and other industrial equipment

DO YOU HANDLE ANY OF THESE LIQUIDS?

☐ Acetates ☐ Alcohols ☐ Ammonia ☐ Anti-Freezes ☐ Cutting and Flushing Oils ☐ Lacquer Thinners ☐ Plasticizers ☐ Solvents — Aromatic, Chlorinated, Petroleum ☐ Wood and Vegetable Oils

A Tokheim may be used for these and others! Tell us your problem.

For transferring liquids from drums to smaller containers

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one day supply of such materials is generally allowed in the processing areas, thus assuring that all of the material in the main building will be used each shift.

The irritating gas liabilities in the event of a fire should also be guarded against when certain substances are used or stored in a building. Tanks for such material should be of sturdy material and mounting, not near other equipment of flammable nature, provided with safety relief and excess flow or control valves at the tank as well as at the point of use. Material subject to spontaneous combustion or to heating when damp should not be permitted except in incombustible bins or vaults. This generally applies to various organic materials and to unslaked lime. There have been several large fires started by or in such materials.

As to dynamite or other explosives, the underwriters would rather they not be used. Perhaps the breaking up of piles of amorphous materials in such industries as the fertilizer industry, can be achieved through the use of gasoline dumpsters and other mechanical means, or with carbon dioxide cartridges to displace the use of explosives. When dynamite is used, it and detonators should be separately stored. Underground vaults with substantial but unattached covers perhaps offer the best protection, with all metal parts bonded and grounded, and without heat or light devices inside.

Greasy clothing in wood lockers and strike-anywhere matches in clothing in lockers have caused fires which would have been confined to the locker contents if substantial metal lockers had been provided. Oily rags and other trash belong in covered cans until safe disposal. In fact, it is good practice to have covered metal cans or metal-lined bins with self-closing tops for cleaning or wiping rags and similar materials.

Where steam pipe coils or radiators are used for heating at floor level, they should be provided with screen guards whenever they are subject to use as clothes drying racks. Bearings, conveyor systems and elevators must be maintained in proper alignment and properly lubricated and cleaned to avoid frictional overheating as a fire source; and loading, dumping, mixing and filling areas and elevator heads and pits should not be overlooked in the general plant housekeeping.

There should be no need for makeshift heating arrangements such as stoves or portable devices in any new plant, but where stoves are used there are well-established standards for their arrangement and for clearances, including those for stacks and vents. Oil fuel devices should bear the label of the Underwriters Laboratories, with any oil stove conforming with the NFPA Flammable Liquids Ordinance. Portable oil heaters should never be filled while in service; this is a rule freely treated with contempt, frequently with disastrous results. In general, stoves should be substantially set on legs on masonry or masonry-protected floors, and it is advisable to allow a 3-foot clearance around the stoves, maintained by metal screens if necessary.

Where metal stovepipes must pierce combustible walls or roofs, including wood members of wood skeleton metal clad walls, the clearance to wood should be maintained by a metal collar or braces affording a minimum of 6 inches clearance all around ordinary small-sized stove pipes. This means a circle of 18 inches in diameter around a well-centered 6-inch stove-pipe. For gas units requiring vents there are underwriters' approved flues generally needing but 1-inch clearance for other than large Btu capacity heaters.

Electrical Inspection

Electrical installations should have regular maintenance inspections to assure continuity of operations, safety to life and absence of fire hazards. Motor and equipment frames, and metal protected wiring systems should have the required ground connections. Open wiring should be maintained firmly supported at the proper distances on the standard insulator supports, and sections torn loose or otherwise abused should be replaced. Fuses require an occasional checking, as it is common to find the original 15 ampere safety devices on no. 14 wire branch circuits replaced by 30 ampere fuses, thus removing the safety factor.

Watch for pendant lamps in contact with combustible material such as bags and boxes. These should be arranged differently, or wire guards placed over lamps. In some cases a double globe would be advisable even though the location is free from dust, dampness or vapor hazard.

Electrical equipment subject to corrosion should be kept well painted with corrosion resistant paint, and motor frames, windings, starting devices and bearings should be cleaned of dust as often as necessary, to assure long and safe operation. Any open equipment in dusty locations may be noted for replacement by dust tight devices in long-range improvement planning. If several changes have been made in an original electrical installation, it may be well to have the load checked at various points, and when that is done the resistance to ground should be tested.

A word of caution about temporary installations: "temporary" is very frequently an unreasonably long time, but regardless of the length of time a substitute motor or circuit is intended to be used, it should be installed in substantial manner with proper fusing and grounding.

Cutting and welding torch use is accountable for an increasing number of fires despite widespread publicity for safe use. Be certain the users are qualified to the extent of knowing the hazards and safeguards of combustible and explosive material being worked on or nearby when portable cutting or welding equipment is being used outside the welding shop. Do not permit the torch to replace the hack saw completely.

Smoking should be permitted only in safe areas, not where combustible stock and supplies or material in

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combustible containers are stored or where localized specific hazards exist. Areas designated as permissible for smoking should be provided with metal receptacles for discarded smoking materials, and a campaign for safe smoking habits should be instituted.

Maintenance factors in fire protection require that specific or favorable design features affording fire control through limitation of damage, such as space and fire walls, be maintained during plant alterations and expansion; that no occupancy be established in a structure unsuitable for that occupancy or creating an exposure to important property; that special safeguards be provided for changed operations which introduce an element of hazard.

Elimination of fire causes requires common sense and vigilance. The most common hazards are possibilities in practically any type of plant, and each specific industry has a few special hazards. Fire equipment is available for varying conditions found in industry. Its proper maintenance requires no more than scheduled weekly to monthly inspections, and semi-annual to annual recharging. Such exercise of the major equipment affords fire brigade training; the testing of the smaller devices gives the chance to both instruct and interest the entire personnel of the plant.

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NYU Offers Courses In Accident Prevention

THE spring term, evening program in industrial and traffic-accident prevention training offered by the Center for Safety Education, New York University begins February 1, 1954. The present curriculum makes it possible for students enrolled for a full program of 11 courses to receive a Certificate in Industrial Safety, or a Certificate in Traffic Safety.

Courses to be offered are Safety directors and safety engineers—Their qualifications, duties, and responsibilities; Safety organization: values and limitations; Management and supervision in accident prevention; Industrial hygiene and occupational diseases; Accident prevention for operators of smaller motor-vehicle fleets; Special problems in accident prevention; Psychology of accident prevention; Accident prevention for small firms. In addition a special course in Marine accident prevention will be offered.

Information about these and other courses and activities may be secured by writing the Center for Safety Education, New York University, Washington Square, New York 3, New York.

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What We Know, Don't Know, and . . . Ought to Know About Commercial Vehicle Drivers

By DR. LEON BRODY
Director of Research & Publications
Center for Safety Education
New York University, New York City

PART I

It is estimated that there are well over 5 million truck drivers, one of the largest job classifications in the country. The volume of supplies these drivers transport day in and day out is enormous. In fact, they haul 75 percent of the nation's freight. Who are the men who do this truly vital work?

Generally, their ages range from 20 to 60 years; the average driver is in his early thirties. About half have completed a high school education. The great majority are married. Most of them have one, two, or three dependents. Their intelligence, measured by the usual tests, is about average, with significant percentages above and below this level. As for general personality characteristics, test scores do not suggest any disproportionate extremes, either statistically or clinically. Their range of interests also does not vary from the usual.

Comparatively speaking, their driving record is pretty good. Their vehicles are involved in 1 out of every 5 accidents—just about in line with the ratio of commercial vehicles to passenger cars. However, the average commercial car travels four times as much as the average passenger car. On the other hand, the great majority of truck accidents that do occur happen under what might be considered "perfect operating conditions;" only a small proportion are due to "mechanical failure."

Taken at face value, these facts indicate no difference between commercial vehicle drivers and other drivers. It is obvious, however, that the driving exposure of truck and bus operators differs substantially from that of other drivers. Most important differences are in the types of vehicles driven, which in itself creates a number of unique

Army Lowers Score on Motor Accidents!

Motor vehicle accidents in the U. S. Army have dropped considerably from 1946 to 1952, as shown in the Army's exhibit at the National Safety Congress in Chicago. The exhibit shows that Army vehicle accident rates dropped from 2.6 accidents per 100,000 miles driven in 1946 to 1.71 accidents per 100,000 miles in 1952. —U. S. Army photo

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operating problems; and in the period of operation, which is characterized chiefly by continuity over 6, 8, or 10 hours, usually extending into dusk, dark, or dawn. From such a hurried job analysis, as well as on the basis of research, it may be assumed that fatigue is a particularly important factor in accidents involving commercial vehicle operators.

The Question of Fatigue

The relation of fatigue to accident occurrence has been discussed many times and a great deal of research has been conducted in the general industrial field. In connection with commercial vehicle operation, a very significant contribution was made by the United States Public Health Service in a 1938 study. In general, tests for reaction time and manual steadiness revealed the effects of long-continued driving. Performance was definitely poorer after ten or more hours on duty, supporting the general observation that long automobile drives tend to affect adversely certain sensory discriminations, mental processes, and motor responses.

Although the number of hours on duty is important, we now know that this variable can by no means be considered the sole or even major contributing cause of accidents. As a matter of fact, according to the accident prevention departments of two large insurance companies, approximately 60 percent of all long-haul trucking accidents in 1949 occurred during the first 3 hours of driving. This suggests that the off-duty activities of drivers are more apt to influence performance than on-duty activities; that the living habits or general behavior of the driver must be taken into account. **(This is clue #1 to what we ought to know about our drivers.)** The implication is that analyzing and controlling accidents among truck and bus drivers may deal with essentially the same problems found in accidents involving the general driving public.

It is possible to go one step fur-

ther; it can be said that the same types of problems prevail in industrial accident control. As a matter of fact, it has been found that the efficiency of industrial employees is influenced more frequently by inadequate motivation, boredom, poor employee-management relations, and domestic difficulties than it is by excessive hours, environmental conditions, and other physiological fatigue factors.

For example, in one large industrial organization a study of all medical contacts over a period of years revealed that eighty percent of the visits were made by 30 percent of the plant population. The interesting fact is that the individuals comprising the 30 percent group were found to have a high incidence of neuroses; specifically, at least half of the visits had their origin in some form of psychological maladjustment. The behavior of many of these individuals was described as **"impulsive, aggressive,** or **irresponsible."** These terms constitute **clue #2**—for these traits undoubtedly contributed to the group's high incidence of accidents.

Studies of Accident Repeaters

In Ontario, Canada, Drs. W. A. Tillmann and G. E. Hobbs of the University of Western Ontario interviewed 40 taxicab drivers, half accident repeaters and the remainder relatively free of accidents. The accident repeaters were readily distinguished by a personal history of —again—aggressiveness, impulsiveness, and intolerance of limitations on their behavior. Specifically, the repeaters came from families marked by parental disharmony and excessive strictness. They were frequently absent from school, while their conduct in school required discipline. They frequently changed from one job to another, and were often fired. They had few friends but many acquaintances. Their main interests were sports, drinking, gambling, and dancing. Although their previous health was good, personal injury from accidents was common. They often attempted to impress people,

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but showed no concern with their own problems or those of others. They were fatalistic, materialistic, and opposed to discipline and routine. For the most part, the taxicab drivers in the low-accident group manifested a personal history quite the reverse.

In another study along the same lines, Dr. Tillmann compared the social adjustment of accident-repeaters and accident-free drivers in the general driving population. Social adjustment was based on the records of the Juvenile Court, the Adult Court, the Public Health and Venereal Disease Clinic, three social service agencies, and a credit bureau. Sixty-six percent of the accident-repeaters had a record of anti-social behavior compared to 9 percent of the drivers with good records.

Thirty-seven truck drivers were investigated by Dr. Tillmann because they displayed a remarkably low accident rate. These men had stability and mature living habits. The conclusion is that the habits necessary for safe driving are also those necessary for good living. In short, "a man drives as he lives."

From Northwestern University comes a study of the personal characteristics of commercial bus drivers, again a comparison of accident-repeater and accident-free groups. Harold Wisely found no important difference between the groups with respect to visual acuity, depth perception, night vision, recovery from glare, complex reaction time, or test scores in mental ability. He did find a significant difference in personal history and personality characteristics. In a laboratory-type test, the accident-repeaters seemed to react impulsively in many situations, tended to become frustrated in others, and evidenced an inability to make adequate decisions or choices.

One of Wisely's most important observations is that the accident-repeaters not only had a history of accidents, but also were reported relatively frequently for poor driving, were guilty of more violations of company procedures, and had more unexcused absences. These findings support the hypothesis that the accident-prone individual (or potential repeater) is not just accident-prone, but is maladjusted, of which one symptom is accident-involvement.

Under the direction of Dr. D. J. Moffie at North Carolina State College, continuing studies are being made of the accident experience of tractor-trailer drivers in relation to the personal characteristics of these drivers. Again, reports indicate that the most important factors in safe driving have to do with personality traits; that certain personality traits stand out above such factors as intelligence, education, and even years of previous trucking experience.

Direction of Research

It all begins to add up. Studies such as those at Northwestern Ontario and North Carolina State have been more or less exploratory, yet they tend to point in the same direction. It is worth noting that a number of current investigations of broad scope are furnishing confirmation of these findings and trends.

A 3-year research program into human factors in highway transport safety has been undertaken under the direction of Dr. Ross A. McFarland of the Harvard School of Public Health and under the sponsorship of several agencies, including the American Trucking Associations. Suffice it to say that it underscores the importance of the basic nature of the man behind the wheel.

The high cost of motor vehicle accidents to military personnel led to the establishment in 1949 of a broad program of research by the United States Army designed to investigate psychological factors in safe operation of motor vehicles. It was the consensus of the investigators that only a small proportion of accidents could be ascribed to faulty vehicles or to hazards inherent in the roadway; that the vast majority of accidents were due to the human operators. Highly promising programs of selection, training, and management of military drivers have been inaugurated.

(Continued on page 55)

SAFETY ACHIEVEMENTS

A NATIONAL Safety Council award has focused attention upon the industrial safety record achieved by employees of Apex Electrical Manufacturing Company in compiling more than 5,200,000 working hours without a lost-time accident.

In accepting the Council's 1953 award for light fabricating plants, Apex President C. G. Frantz pointed out that the safety record actually covers a two and one-half year period dating back to the spring of 1951. He cited the company's employee safety steering committee, headed by Safety Director Louis J. Lackner, for much of the credit in achieving the record.

"Measures designed to prevent accidents, and good plant housekeeping are emphasized by the employee safety committee in its efforts to promote safe working habits among Apex employees," according to Mr. Frantz. The Safety steering committee meets weekly to direct a continuing safety program.

FOR the best record of safety among 26 sub-contractors building the Savannah River Atomic Energy Commission plant, Virginia Metal Products, Inc., has permanently won the safety award presented by E. I. DuPont De Nemours & Company, supervising contractor for the government.

In a year and a half of erecting metal partitions for offices and laboratories, totaling 153,446 man-hours, the company had no accidents causing work interruptions. Precautionary safety measures instituted by the firm's erection superintendent, Carl H. Johnson, were credited with the high safety record on the job. Mr. Johnson made it a policy that every member of the working crew wear crash helmets and use tools properly.

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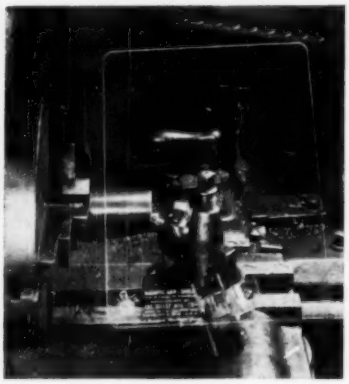

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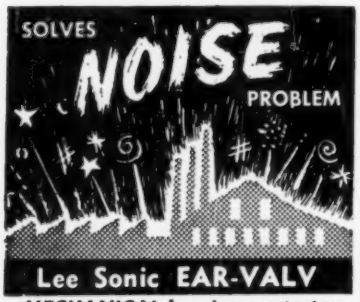

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INSIDE THE TRADE

Robert Malcom, Sr. 1871–1953

THE safety industry lost one of its staunchest supporters on November 27 when Robert Malcom, Sr., chairman of the board of Chicago Eye Shield Company, died of a cerebral hemorrhage in his Chicago home.

Mr. Malcom's colorful career started in Chicago where he was born on September 27, 1871. At the age of 9 the family moved to Stockton, California, where he lived on a farm until he was 14, after which he returned to Chicago and graduated from the Lake View high school.

Early Goggles

Starting in the bicycle business as a parts salesman, Mr. Malcom became a well-known figure on the streets of early-day Chicago and was later transferred to San Francisco where he opened a store. But Chicago was his home and in May, 1903, he founded the Chicago Eye Shield Co., which is now familiarly known as Cesco. In that little shop on Clinton Street there were 8 people at the start, including a partner and 6 girls who made celluloid goggles which were popular in those days of open automobiles. As time progressed, a new product was added to the line. It consisted of leather cupped goggles with metal frames. The business prospered and in 1915 with a brand new patent on fiber welding goggles, a plant was built at 2300 W. Warren Blvd., Chicago in a residential neighborhood, and a forerunner of the large, modernly equipped Cesco plant.

Mr. Malcom took a keen interest in safety equipment for head and eye protection. He was particularly interested in the design and development end of the business and patented many items, later models of which are standard equipment today in plants all over the world.

His Safety Developments

Some interesting highlights of Mr. Malcom's work were the development in 1924 of bakelite goggles for welding, chipping, and other hazardous operations; a one-piece positive pressure sand blast mask introduced in 1930; the comfort bridge goggle patented in 1937; improved designs of welding helmets and face shields brought out in 1943; plus many other patented products.

Although 83 years of age at the time of his death, Mr. Malcom was still actively engaged in the business up until two days before his death. Mr. Malcom is succeeded by his son Robert Malcom, Jr., who became president and chief development engineer in 1948.

Principals Take Over Acme Ownership

WITH the purchase of the interests of inactive partners, Acme Protection Equipment Company, Chicago manufacturers of gas mask equipment, is now owned and operated wholly by active principals in the business, according to an announcement by G. M. Glidden, general manager. The partnership is now limited to Mr. Glidden, R. A. Flood, production superintendent, and N. C. Tamandl, purchasing agent and office manager—all of whom have been active with the company since 1946.

"We do not plan any drastic changes in either the policy or operation of the company," said Mr. Glidden, "but will concentrate on continuing improvements in production methods and product design on gas masks and canister equipment."

With a background of 31 years in the safety field, Mr. Glidden has had wide experience in the sale and manufacture of safety equipment.

Commercial Drivers

(Continued from page 52)

The New York University Center for Safety Education is furnishing technical advice and assistance at the newly established Driver-Testing Clinic operated by the Motor Vehicle Bureau of New Jersey. Hundreds of drivers are being referred to the New Jersey clinic because of repeated accidents and violations; there they undergo intensive psychological examination. Many of them, incidentally, are operators of commercial vehicles. Out of this extensive research may come specific suggestions for improved driver licensing or selection, and for preparatory and remedial training. In addition, there may be a cathartic if not remedial effect of simply being processed through such a clinic. Six months after these accident-repeaters and chronic violators have been examined at the clinic, and again after twelve months and eighteen months, their motor vehicle records will be checked to determine whether or not there has been any improvement in their driving.

(Part II of this article will appear in next month's issue.)

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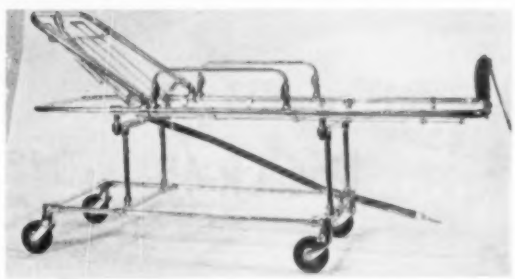

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"What's the Law?"

Edited by
HENRY M. GROSMAN
Counsellor at Law, Newark, N. J.

Master Superior Court, New Jersey
Member
American Bar Ass'n, New Jersey Bar Ass'n,
National Federation Insurance Council
Past Commander, American Legion, Post 10,
Newark, N. J.

"HORSEPLAY" HELD COMPENSABLE

FIVE minutes before quitting time a machinist left his work to inquire from a friend, in another department, if he could obtain a lift home. The employer was cognizant of this common practice.

During the conversation, a fellow employee offered the machinist a drink from a bottle labeled "Barclay's Gin." The bottle contained carbon tetrachloride. The other employee knew this fact and deliberately withheld telling the machinist. The liquid had been obtained from the employer's stock room with his permission. As a result of this practical joke, the machinist suffered severe internal injuries.

The court held that the injuries arose out of an accident which occurred in the course of employment. (*Burns vs. Merritt Engineering Company, New York Court of Appeals, No. 33, January 18, 1951.*).

FAULTY SAFETY EQUIPMENT CAUSES AMPUTATION

The employee was a bolt-feeder on a gimlet pointer machine. The unfinished bolts were fed into the machine through a hole on top. On the base of the machine and to the operator's left were the operating buttons. The cog wheels which operated the machine were 18 inches to the left of the feeding point. These wheels were covered by a metal guard.

At the time of the accident, the guard was loose. Injured was feeding the machine when a bolt jammed. This caused the loose guard to fall off and exposed the cog wheels. As the guard flew off, the employee slipped while attempting to shut off the machine's power and his hand came in contact with the gears. As a consequence, 3 fingers had to be amputated.

At first the court held that the

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employer had permitted an employee to work in violation of a Labor Law and on a machine without proper safety equipment, but on appeal to a higher court, no violation was found and the award of double compensation was modified to allow only a single award. *(Gawrys vs. Buffalo Bolt Company, New York Court of Appeals, April 12, 1951.).*

SOCIAL CALL DURING EMPLOYMENT HELD NOT COMPENSABLE

Gas was escaping from a tank where it was stored. An explosion occurred and killed an assistant manager of a bottling company. It was this man's daily custom to place the outgoing mail of the day in a mailbox on his way home. But on the day of the accident, he left the company premises in a company vehicle toward a mailbox. Before completing the task of mailing letters, he stopped at a laundry on the same route.

The assistant manager was in the habit of stopping at this laundry to chat even though the bottling company had no business dealings with the laundry. The court held that as the assistant manager was in the course of employment but had departed from his employment to stop at the laundry, the accident was not compensable. *(Mims vs. Nehi Bottling Company, South Carolina Supreme Court, No. 16,464, February 9, 1951.).*

PRE-WORK INJURY HELD COMPENSABLE

Employee was hired by a Massachusetts college to care for athletic equipment and lockers. He was instructed to report on the following Monday at the office of the superintendent; where, before beginning work he was to sign withholding slips and the payroll.

On Monday, while walking toward the office of the superintendent, the man was run into by one of the students of the college. The man suffered a broken hip which completely disabled him.

The Court held that the injured was under contract at the time of the accident and it occurred in the course of his employment. *(Warren's Case, Massachusetts Supreme Judical Court, February 2, 1951.).*

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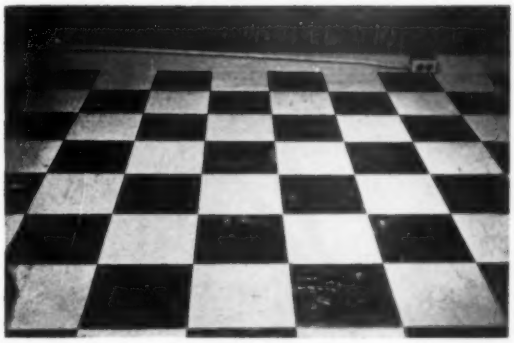

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A coal miner was operating a cabledrawn shuttle car loaded with coal in his employer's mine. He was taking hold of the loose cable when suddenly the power reel started to take up the slack. The cable caught the miner's hand and foot and he was thrown to the floor of the mine. His left hip and knee were injured. He went to the doctor on the following day for treatment and was out of work for 2 weeks. After returning to work, he continued at the same job for 5 months until he became disabled to continue claiming his disability from the earlier accident.

This matter was put into litigation to determine the extent of Anthony's partial disability. *(Anthony vs. Lee Coal Company, Pennsylvania Superior Court, No. 89, January 12, 1951.).*

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Industrial Hygiene

Associate Editor
Jacob A. Goldberg, A.M., Ph.D.

$25,000 Study On Chicago Air Pollution

PLANS for a 25 thousand dollar study to combat air pollution in the Chicago area have been outlined by Dr. H. A. Leedy, director of the Armour Research Foundation of Illinois Institute of Technology and president of the Midwestern Air Pollution Prevention association. Dr. Leedy detailed the association's 3-point program: determining the sources of pollution, analyzing a large number of case histories of smoke violations in the files of the city's air pollution control department, and an education program to inform Chicago residents of the problem and how it can be controlled.

"The study to determine sources of pollution should yield basic information for deciding the necessary steps to reduce air pollution," he explained. A number of modern analytical methods and several different sampling techniques which have not been used before in the Chicago area will be utilized in the study. It is planned to reduce information from case histories to IBM or key sort cards so that the results can be quickly tabulated and interpreted by an engineer trained in statistical methods. Statistical studies of such data should lead to definite conclusions as to the factors responsible for smoke violation.

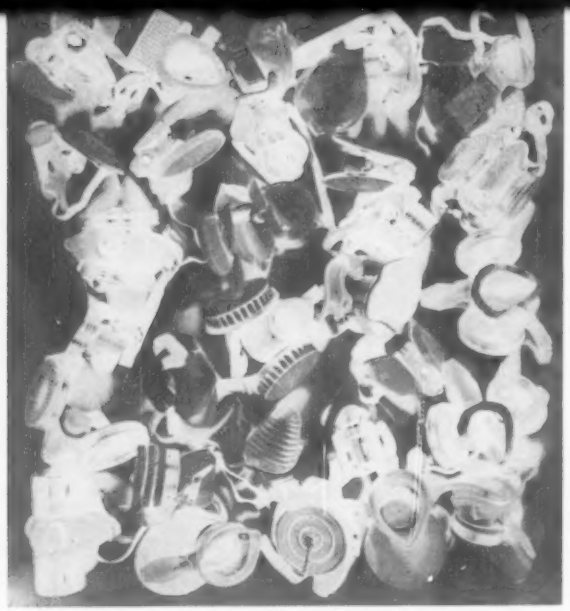
Is There An Answer For SMOG?

HAVE you been smothered by smog or smaze lately? The Eastern seaboard, New York City in particular, recently had a 5-day bout with the phenomenon. Visibility in the metropolis dropped to 15 feet in some places. Citizens complained of smarting eyes, difficulty in breathing, and nausea. The weather bureau, coughing and recalling the deadly murk of London and the terrifying smog that hit Donora, Pennsylvania, warned people to stay indoors.

This smaze or smog (what it's called depends on where you live) is simply a mixture of smoke and fog or smoke and haze, but that definition doesn't go very far. The one sure ingredient is smoke—smoke and fumes, which many industrial areas spew and belch forth from plants all day long, year after year. Ordinarily, in clear weather, some of these dangerous waste products are carried away. In the recent New York smaze, however, a stagnant air mass formed over the city; and, with no wind to blow it away, forced the inhabitants to breathe their smoky waste over and over.

What do you do about it? Since man is a long way from controlling the weather, the best chance to control the air pollution menace seems to be to stop smoke and fumes before they get into the air.

A development that merits attention is the use of catalysts to remove dangerous fumes and gasses from wastes. Two recent articles in SAFETY MAINTENANCE & PRODUCTION have dealt with catalytic control of air pollution. In the September, 1953 issue an article entitled "Catalyzing Air Pollution Problems" discussed the successful use of a catalyst to control various stack problems. In the November, 1953 issue another article, "You Can Use Gasoline Trucks Indoors, Too" devoted itself to an application of the catalyst which removes carbon monoxide fumes from materials-handling trucks. Check your back issues and see if these articles can help solve your air pollution problem. ALSO . . . ***watch for*** "An Answer To Air Pollution" in next month's issue!



RESPI

PART I

RESPIRATORS should be used to supplement other means of controlling atmospheric contaminants, as a temporary expedient, or when other methods of control are not readily available or practical. It is only human to close one's eyes to the need for an adequate ventilation system that might cost thousands of dollars in favor of using respirators that might cost a few hundred dollars at most. However, experience has shown that, in the long run, the cheaper choice may be the more expensive.

If it has been decided to use respirators, keep in mind these points in selecting the proper respirator for a given situation: a. The nature and degree of the hazard; b. the type and concentration of the contaminant; c. the period for which respiratory protection must be afforded; d. the location of the hazardous atmosphere with respect to a source of respirable air; e. the expected activity of the wearer; and f. the characteristics and limitations of available respirators. Adequate protection is the first requisite of a respirator, regardless of all other considerations. Choice should be made, of course, from respirators approved by the Bureau of Mines.

The bureau receives many requests for advice on the type of respirator to be used in certain specific situations. Its recommendations are based on what it considers adequate respiratory protection; and, if the choice is borderline, it leans toward the conservative side. In some instances, the choice of respirator is not accepted because "the men will not wear it," and the bureau is urged to recommend use of a less safe respirator, that the men "will" wear. To be sure, the comfort of the wearer and his convenience must be considered, but there can be no compromise with safety. A parallel example would be the refusal of a person to wear rubber boots to protect his feet and legs from corrosive liquids because stockings are lighter and more comfortable.

There is also a parallel between ships and respirators. Ocean-going vessels eventually accumulate a rough coating of barnacles that must be removed from the bottom from time to time to keep the vessel shipshape. Man has also found that he has to keep a constant check on rigging and replace rotted and broken sections, patch the sails and dry them to prevent mildew and rotting, and practice good housekeeping to keep vermin and disease under control. The coming of steam has not ended

PICK

these maintenance jobs. Indeed, the routine has become standardized to assure that the vessel will always be in good operating condition, whether it is on active service or on standby status, and will not fail in an emergency.

Respirators also need continuing scrutiny and care so that they may perform their functions safely when called upon. The "barnacles" of oil must be removed periodically from the facepiece. The "rigging" or head harness, must be checked for weak spots and replaced when necessary so that the facepiece may be fitted securely and comfortably in place. The filters, cartridges, canisters, or oxygen supply for the respirators must be replaced as needed. The complete respirator must be kept in good condition whether it is used daily as is the dust respirator, or at infrequent intervals, as is the self-contained breathing apparatus.

One day a very indignant man came into my office, threw a respirator on my desk, and demanded to be told why the Bureau of Mines approved "a thing like that." After my first surprise, I picked it up and looked

RATORS...

By S. J. PEARCE
Chemist in Charge, Respirator Section,
Health Branch, U. S. Bureau of Mines,
Pittsburgh, Pennsylvania

FEATURE

Second article of a feature series on Respiratory Protection. The next article will appear in the February issue.

at it. Sure enough it was an approved respirator, but never have I seen one in such bad condition as this one was. The rubber portion of the facepiece, which normally was one-sixteenth of an inch thick, was about one-quarter inch thick. The elastic head harness was curled into a string, had no snap to it, and was knotted in several places to take up the slack. The interior of the facepiece was a mass of caked dirt. One inhalation valve was missing, and the filter was dirty and also caked with dust.

After the man had calmed down a bit, I asked him how often he had washed the facepiece. He said, never. Then I asked him how often he had replaced the filter. He acted surprised and said that no one had ever told him to wash the facepiece or change the filter.

I explained to him that the facepiece should be washed with warm soap and water each day to remove the oil left there by the wearer's face. If this soil is not

THE RIGHT ONE...

removed, it may cause the rubber to soften and swell, as evidenced by the condition of this respirator. Furthermore, keeping the facepiece clean makes it less unpleasant to wear.

I suggested that the elastic headbands be removed before this daily washing, but that they should be washed from time to time and laid out flat to dry. When they began to lose their elasticity or become curled too badly, they should be replaced.

As for changing the filters, I explained to him that, as more and more dust is removed from the air that he breathes and is retained on the filter, it becomes more difficult to breathe through it, until finally a point is reached when this increased resistance to breathing becomes noticeable to the wearer.

At this point, the filter should be removed and replaced by a fresh filter. If the respirator is of the type that has a reusable felt filter, the dust should be removed by tapping the filter on a solid surface and blowing off the adherent dust with clean, dry compressed air, if available. If this is done, care should be taken not to inhale the dust that is blown off the filter.

I also told him that he should check the condition of the exhalation valve to see that it seated properly.

Worn or damaged parts should be replaced only with parts obtained from the respirator manufacturer and not with makeshift substitutes. I emphasized to this man that the Bureau of Mines approval of a respirator is an indication that the device has met the Bureau's minimum performance requirements, but that it is the responsibility of the user to maintain the respirator in good condition. He left the respirator with me, and I kept it for a long time to show it, on occasion as a horrible example of poor maintenance.

Two more examples of poor maintenance are worth mentioning. They both have to do with hose masks. In the first instance, a man put on the facepiece of a hose mask that had been stored for some time, and his partner started to crank the hand-operated blower. After only a few seconds, the first man yelled, snatched the facepiece off, and started spitting, coughing and rubbing his eyes. His eyes, nose, and mouth were drawling with tiny red spiders that had made their home in the hose while it was in storage!

The wearer need never have encountered the spiders and could have avoided the pain and discomfort, if the blower had been operated rapidly for a minute or two

AND TAKE CARE OF IT!

before the facepiece was put on, or if the hose ends had been plugged in storage.

The second case parallels the first, in that the man wearing the facepiece was forced to remove it soon

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Respirators—(Continued from page 61)

after the blower was turned on. Dust and dirt from the interior of the hose-mask trunk were being blown into the wearer's face. The last time the respirator was used, the outside of the hose became coated with mud, which was not cleaned off before it was stored in the trunk. During storage, it dried and fell off in the trunk and was picked up by the blower and blown in the face of the next person to use the hose mask. Dirt and oil should be removed from the outside of hose-mask hose before storage.

Respirators of all types should be kept in good repair and stored properly away from heat, sunlight, and oil, all of which accelerate deterioration of rubber parts. I have seen gas masks hung on nails by their head harness or their breathing tubes and some respirators hung up in shops and plants by their headbands so that a thick layer of dust covered the interior of the facepiece. Yet men were supposed to use these respirators if the occasion arose. Needless to say, the men in these plants used them only as a last resort.

In summary, if respiratory protection is needed in the plant, select the proper type and maintain it in good operating condition.

This is the first part of this article. The second section will appear in the February issue.
Picture credits: upper left—Bureau of Mines.
lower right—Mine Safety Appliances Co.

Industrial Ventilation Conference February 1–3 at Syracuse University

THE first 3-day Industrial Ventilation Conference, sponsored jointly by the New York State Labor Department's Division of Industrial Hygiene, and Syracuse University, will be held at the University's Maxwell Hall from February 1 to 3. The purpose of the conference is to acquaint plant engineers, safety and industrial hygiene personnel, sheet metal contractors, and ventilation engineers with latest information on the design of industrial exhaust systems.

Under the instruction of engineers of the Division of Industrial Hygiene and other experts in the field, the participants will meet in lecture and in small seminar classes. Classes will be arranged according to the experience of the participants. Lectures will include discussion of basic elements of exhaust systems, such as hoods, piping, fans and dust collectors. In the small classroom groups actual design problems will be solved.

One feature of the conference will be the opportunity to have individual problems discussed by the group. Lectures by personnel from the medical and chemical units of the Division of Industrial Hygiene, to provide participants with a complete picture of the industrial hygiene problem, will also be included. Major emphasis, however, will be on exhaust system design.

Among those participating are Dean Ralph Gal-

braith, School of Engineering of Syracuse University; Dean Alexander N. Charters of University College; Assistant Industrial Commissioner Frank J. Costello, Syracuse; Dr. Irving Tabershaw, Director of the Division of Industrial Hygiene.

A nominal registration fee will be charged to cover the cost of tuition and materials. Applications and requests for additional information should be addressed to Miss Eleanor Ludwig, Co-ordinator of Conferences, University College, 601 East Genesee Street, Syracuse, New York.

Book on Solvents

THE problem of the toxicity of industrial solvents has been receiving increasing attention among safety engineers and hygienists in recent years. A new, up-to-date handbook, "Toxic Solvents," by Dr. Ethel Browning has recently been published.

Dr. Browning is H. M. Medical Inspector of Factories in Great Britain and prepared the book as an active reference for industrial chemists, engineers, safety directors and others concerned with the health, safety and efficiency of plant operations.

The volume features descriptions of the physical and chemical properties of organic solvents, their physiological characteristics, a concise listing of all major solvents (with their individual properties, uses, toxic effects and treatment), and a glossary of medical terms.

"Toxic Solvents" is available from St. Martin's Press, 103 Park Ave., New York 17, N. Y., at $4.00.

Rheumatic Diseases in Industry

AMERICAN industry is presently losing approximately 10,500,000 work days annually because of rheumatic diseases, William S. Richardson, executive vice president of The B. F. Goodrich Company told the Ohio and Western Pennsylvania regional meeting of The American Rheumatism Association in Akron, O., recently.

Deploring this tragic loss of manpower, the rubber company executive declared that the cost of poor health, in terms of illness and injuries, is incalculable to both employee and employer.

"Industry," he said, "stands ready to cooperate with the medical profession in not only improving working conditions as they manifest themselves, but industrial research will continue to be a fountain of new knowledge upon which the medical profession can draw to assure continued progress in improving the health of our people."

The speaker said that the expected increase in the Nation's population, which will add some 22,000,000 people by 1963, poses a challenge for both industry and the medical profession.

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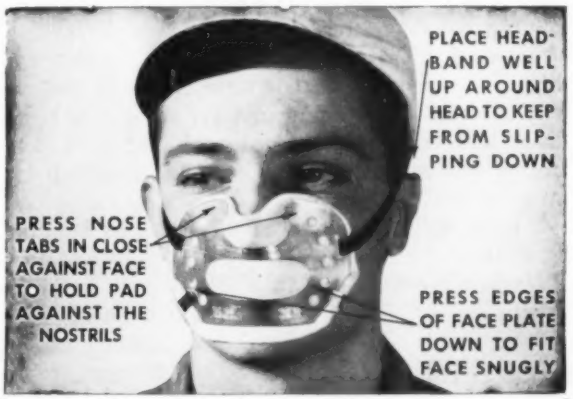
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The Industrial Nurse

Editor
Rosamond J. Webster
R.N., A.M., Ph.D.

Getting the Facts

THE best means of accomplishing something definite in industrial health is to gather all suitable, available facts bearing upon a specific situation. That is why so much emphasis, in industrial medical departments, is placed on careful record-keeping of attendance, absenteeism, and the history of specific types and number of accidents.

The Research Council for Economic Security has recently initiated a broad study to determine the cost of absences. First reports indicate the ultimate objective of studying records covering 400,000 employees, representing 1 percent of the nation's private non-agricultural employees. The study is confined to persons absent from work for more than 4 consecutive weeks because of non-occupational disability. A progress report shows that in 15 large plants already surveyed, 22,778 workers were covered. There were found 749 absences of more than 4 weeks due to non-occupational disabilities. The rate for women was found to be higher than that for men.

It is too early to draw any valid conclusions from the figures thus far available; however, it is evident that all industrial nurses and their professional associates have a distinct responsibility which is frequently emphasized in these columns—that of keeping careful records of all absences, illnesses, and facts related to them. In this way management can be alerted to possible plant health and accident hazards, personnel policies, communal medical, hospital, nursing and other needs and shortcomings; possible expansion of the plant medical department and a number of related matters. This type of bookkeeping is essential from many points of view. Still, care must be taken not to draw the wrong conclusions from limited statistical data. One may lean in the wrong direction and either neglect the actual problems, or ignore them unconsciously.

Occupational Diseases

THE Public Health Service has attempted to obtain a comprehensive national picture of the evidence of occupational diseases. A pilot study for 11 states covered the year 1951. The data compiled were supplemented by information from the annual reports of workmen's compensation commissions in 17 states not included in the pilot study. In the 28 states covered 43,307 alleged or suspected occupational diseases were reported in a 12 month period.

A rough classification according to diagnoses shows that diseases of the skin accounted for 54.3 percent of all occupational diseases. Systemic effects due to chemical agents accounted for 5.2 percent; dust diseases of the lungs for 4.6 percent; other respiratory disorders for 1.5 percent; disorders due to physical conditions for 9.5 percent; infective diseases for 2.7 percent; and mis-

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(For further details, use Key # N-41 on free Inquiry Card on page 71)

cellaneous conditions for 22.2 percent. Wide differences were noted in the number and kinds of diseases reported from state to state, due in part to prevalence and types of industries in given states. These differences were also due in large measure to variations in legal provisions on compensation of occupational diseases and to technicalities in processing the data. Legal stipulations on waiting periods often result in failure to report evidence of skin diseases, for instance. Many workers with steady jobs, or in fear of losing time and possibly jobs as well, do not report occupational diseases even when aware of their origin.

The major problem, of course, is neither the reporting of occupational diseases, nor providing compensation for those reported. Effective prevention is the solution. The many advertisers of protective products in this publication are an adequate index not only of the evidence of occupational diseases, but also of the protective and preventive measures that it is possible to take.

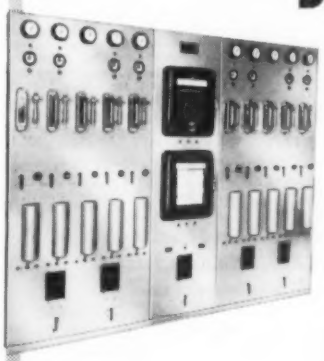
The Problem Drinker

ALCOHOL plays an important part in interfering with production and contributing to absenteeism. From the point of view of industry, an individual is considered a problem drinker when repeated or continued overindulgence interferes with efficient performance of his work.

A recent study of the subject by the medical directors of a large corporation led them to certain conclusions. These were: (1) The seriousness of the problem is not necessarily measured in terms of total incidence. One moderate problem drinker in a key position may far outweigh in importance 10 advanced cases in lesser posts. (2) Certain current methods of dealing with the problem are inadequate. The approach to date has not been constructive.

To detect those addicted to alcohol is difficult for reasons that are part of the personality of the alcoholic. He is using alcohol as a "cover." It serves as a protective mechanism for either an underlying personality defect or a situation which he is unable to handle on a more socially acceptable basis. When the actual intake of alcohol begins to exceed the socially acceptable limits, the problem drinker's associates become aware of the problem. Their immediate tendency is to shield him, and thus fellow workers are inclined to "cover up" for an associate who drinks too much. They fail to report tardiness, inefficiency, and at times actual incapacity to work. In this way referral to the medical department is side-tracked, and efforts to help are stopped short. Everyone needs to recognize that the problem drinker faces both medical and psychological problems. Sympathetic supervisors and fellow workers are not helping the chronic alcoholic by covering up for him. He should

1 TALLER & COOPER'S ADVANCED CARBON MONOXIDE DETECTOR



The finest CO safeguard in the world. Operates continuously without supervision. Accurately detects CO in all ranges, and in concentrations as small as 0.05 parts CO in 10,000 parts of air. Can automatically control ventilation systems and reduce power waste by turning on fans **only** when needed, turning them off when danger is past. Designed for long periods of trouble free, heavy duty operation.

2 TALLER & COOPER'S PORTOCO

A small, compact unit for protection in enclosed areas. May be moved from place to place to spot-check CO concentrations, or operated continuously at a permanent location. Indicates when and where fans should be turned on. Can also automatically control fans. Offers the highest dependability and accuracy at the lowest cost. With slight modifications can be used to safeguard against combustible and explosive gases.

Write for Bulletin 205 and full details.

TALLER & COOPER, INC.

ENGINEERS • MANUFACTURERS

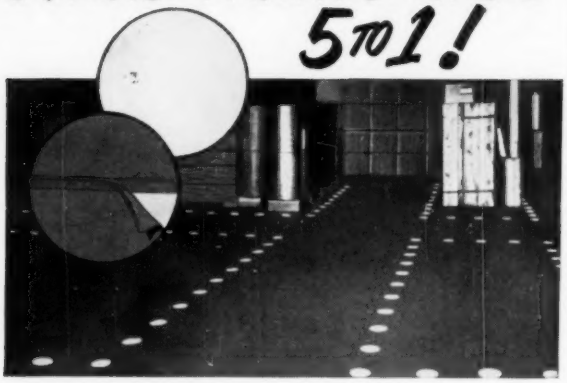
71 Washington Street • Brooklyn 1, N. Y.

SPECIAL PURPOSE INSTRUMENTATION

(For further details, use Key # N-42 on free Inquiry Card on page 71)

BRADY DOTTED LINE AISLE MARKERS

OUTLAST PAINTED LINES 5 TO 1!



NEW self-sticking Brady Aisle Markers cost less to buy, apply and maintain than any other aisle marking method. Stick instantly to clean, dry floors. No moistening or machines needed. Make straight or curved lines anytime without disrupting production. No one waits while paint dries. New, special plastic construction resists abrasion, dirt, acids, oils, most solvents. Stocked in four vivid colors and sizes; specials to order. Write today for literature and usable FREE SAMPLES!

WIRE MARKERS
SPECIAL MARKERS
AISLE MARKERS
PIPE MARKERS
SAFETY SIGNS
MASKS & STENCILS
PRINTED ROLL TAPES

MANUFACTURERS OF SELF-STICKING PRODUCTS

W. H. BRADY COMPANY

EST. 1914

724 West Glendale Ave., Milwaukee 12, Wis.

(For further details, use Key # N-43 on free Inquiry Card on page 71)

SLIP-ON GUARD

PREVENTS FLUORESCENT LAMPS from FALLING

NO ACCIDENT A DAY KEEPS THE DOCTOR AWAY

GETS-A-LITE GUARD and GUIDE
Quickly and Easily Installed by Anyone — No Tools Needed!

- Simply slip GETS-A-LITE GUARD AND GUIDE over the fixture, as illustrated.
- Made of indestructible spring steel wire. Nothing to break, get out of order or replace. Will last indefinitely.
- Once installed, GETS-A-LITE GUARD AND GUIDE is NEVER removed.
- Nothing to unlock, fuss with or lock, when changing lamps.
- GETS-A-LITE GUARD AND GUIDE actually steers lamp into socket, enabling maintenance man to change lamp in 10 seconds!
- Available for 40 watt and 100 watt fluorescent lamps.

Contact Your Electrical Wholesaler, OR

GETS-A-LITE Company—Dept. SM154
3865 N. Milwaukee Ave., Chicago 41, Illinois

(For further details, use Key # N-44 on free Inquiry Card on page 71)

be referred to suitable treatment before his behavior becomes so extreme that discharge may be the only course open to protect both his own health and safety and that of his fellow workers. Excessive drinking is a matter for medical treatment—not one of trying to stave off the inevitable.

Heart-in-Industry

A HEAVILY attended conference dealing with heart diseases among industrial workers was held recently in New York City. The conference was organized to bring together industrialists, insurance experts, physicians, and union officials to consider ways of bringing the worker with heart disease back to gainful employment.

The statement was made that there are 10 million cardiac patients in the country. The objections against employing them were many. Some employers felt they could not employ those who had suffered a heart attack because of the risk of increased insurance rates. Some representatives of insurance companies have expressed the opinion that costs to companies hiring cardiacs would be prohibitive because of possible repeated relapses of these workers. Seniority systems insisted on by certain labor unions prevent cardiacs from being assigned to jobs considered easier and perhaps more desirable for handicapped workers. Existing state compensation laws were blamed by some representatives of industry for discouraging the hiring of workers who had suffered from heart disease.

Work No Cause of Heart Disease

A leading specialist and research worker in diseases of the heart pointed out at the conference that work cannot cause coronary disease, hypertension or rheumatic heart disease; and that there is no substance to the fiction that work can lead to any type of heart disease. Only under special circumstances can toxic materials to which a worker may be exposed on the job, operating over a long time, lead to high blood pressure. Work can aggravate the symptoms of heart disease already present, but this is either the result of an extraordinary effort unusual to the job, or a progress of the heart disease independent of the job. In the former case its unusual character needs to be established. In the latter, symptoms like shortness of breath, tiredness, puffy ankles or chest pains will warn the employee that he needs a medical examination.

All of these are major points that require consideration. Industrial nurses can help by their observation of all workers and by educational efforts with those who come for personal advice or treatment.

What's New...

For your convenience in obtaining descriptive literature of products listed here, use the Reader's Inquiry Card. Just write in the code number given with each item. Or send written requests to:

Service Dept.,
SAFETY MAINTENANCE & PRODUCTION

EXPLOSION-PROOF FLUORESCENT LIGHT

(Use Key # 898 on Inquiry Card on page 71)

THIS new type explosion-proof and dust-tight fluorescent lighting fixture is for use wherever explosive gases or vapors or combustible dusts require safe, practical lighting. Introduced recently by Crouse-Hinds Company, manufacturers of explosion-proof lighting equipment, the fixture may be spaced end-to-end with other fixtures of its type, making possible continuous and uniform illumination along work areas.

Each fluorescent tube is housed in an individual tube of heat-resisting glass. The tube ends are reverse tapered and sealed into cast aluminum housings which also contain the lamp receptacles. The receptacle housings at the ballast ends are pivotally connected to the ballast housing. At the relamping ends, the receptacle housings are fastened to a supporting stem assembly which is attached to the ceiling or a structural building member. Reflectors are accurately formed sheet metal of interior white enamel and exterior aluminum finishes. Securely attached by spring clips, they easily may be inserted or removed after the fixture has been hung.

To relamp, the relamping end of the fixture is lowered by unlocking the link member, after which the threaded receptacle covers are removed. Tools are unnecessary to release lamp receptacle and mounting plate assembly, which is locked into the housing by a bayonet joint. A slight twist of the wrist locks or unlocks it. Type EVF fluorescent lighting fixture is regularly available for straight pendant mounting but special fittings for 45-degrees mounting are also obtainable.

ICE-REMOVING CHEMICAL

(Use Key # 899 on Inquiry Card on page 71)

AN ICE removing chemical which is reputed to greatly cut the winter cost of cleaning steps, walks, drives, loading docks and parking lots is announced by The Monroe Company, Inc.

Known as X-73 Ice Remover, the product is said to melt ice and thaw snow many times faster than salt; and to eliminate ice chipping and greatly reduce the need for snow shoveling. It is also claimed to contain a rust inhibitor which affords protection to automobiles, machinery, drains and gutters. Produced in the form of coarse granules, the compound is easily used by sprinkling lightly over icy surfaces. According to the company, it spreads itself thoroughly to melt slippery ice and snow. It is recommended for furnishing quick traction under spinning automobile and truck wheels. The ice remover is available in 100 and 200-lb. fiber drums and in waterproof paper bags.

SOLVENT SPRAY GUN

(Use Key # 900 on Inquiry Card on page 71)

CONTINUOUS spray cleaning by solvent, emulsion or aqueous solutions is made easier with the new model B-202-M siphon spray gun offered by the John B. Moore Corporation. The gun is designed to draw cleaning fluid directly from a 55 gallon drum and eliminates lost time needed to refill small supply can reservoirs. Many novel features of design suggest its use for washing aircraft, cleaning electric motor parts and stator-frames, engines and engine compartments and other mechanical equipment.

A die-casting handle, built to stand over 4 tons of shock, air-flow control valve on the haft to save trips to the air-supply regulator valve, ball-check to prevent fluid flow-back and adjustable lock-tip nozzle are features which appeal to those who work at shop floor level, as well as to those who work on scaffolding to clean aircraft, and hard to reach surfaces.

LENS-CLEANING STATION

(Use Key # 901 on Inquiry Card on page 71)

AN INGENIOUS new heavy-duty lens cleaning station has been developed by The Silicone Paper Company of America, Inc. Eliminating bottles and pumps, the cleaning fluid includes anti-fogging properties and is packed in a pressure-packed can containing 1,400 applications per can. It is especially designed for foundries, welding sections, mines or other heavy-grit areas or where anti-fogging fluid is necessary for plastic goggles, safety shields or any protective surfaces.

The can containing Magic Cleaning & Anti-fogging Fluid is securely locked to the compact steel dispenser which contains no moving parts and feeds the interfolded wiping sheets 1-by-1 at a great saving. The dispenser contains ample space for waste tissue.

SAFETY EQUIPMENT SANITIZER

(Use Key # 902 on Inquiry Card on page 71)

PERSONAL safety equipment—face-shields, respirators, mask facepieces, ear defenders, clothing—can be cleaned and sanitized thoroughly, quickly and with ease by use of the new "MSA Cleaner-Sanitizer," according to the manufacturer, Mine Safety Appliances Company.

The cleaner-sanitizer is in dry powder form, 25 one-oz. envelopes to a carton, and is easily stored, safe and convenient to handle. The user simply adds an ounce of powder to a gallon of luke warm water. Equipment is cleaned, rinsed and allowed to air-dry. No soap film remains, and the equipment is thoroughly clean. Bacterial count is reduced to levels judged safe by public health standards, the manufacturer reports. Economy is claimed on grounds the individual one-oz. envelopes make it easy to use the correct amount of Cleaner-Sanitizer, eliminating wasteful guesswork. Cleaned and sanitized personal safety equipment is far more readily accepted by employees.

REFILL BLOCKS FOR FLOOR SCRUBBERS

(Use Key # 903 on Inquiry Card on page 71)

WHEN the bristles become worn on a Hild Model "C" or "UC" Floor Scrubbing Machine, the "Shower-feed" Brush can now be refilled in 5 minutes or less with a screw-driver. This development results from an important advance in the design of the shower-feed brush. The brush is now being made in two parts . . . a permanent, aluminum brush back to which is attached a wood-back refill block. When bristles become worn, the user merely removes 8 screws, discards the worn block, and attaches a new refill block in its place. In 5 minutes or less he is ready to go with the equivalent of a brand new shower-feed brush, according to manufacturer, Hild Floor Machine Co.

This development ends the inconvenience of sending brushes out for refilling. There is no need to purchase several costly aluminum brushes in order to have one in use while others are out for refilling. Instead the user keeps on hand a stock of refill blocks for use as needed. The refill blocks are made with a special laminate which does not warp or swell and resists the chemical action of soaps and detergents. They are obtainable with a variety of bristles: Palmetto, bassine, mixed palmetto and bassine, steel-wire, mixed steel-wire and bassine, or nylon. For the present, refill blocks are available only for Model "C" and "UC" machines. They can not be used with existing one-piece shower-feed brushes. However, any Model "C" or "UC" machine now in use can be equipped with a new style brush.

CHEMICAL CARTRIDGE RESPIRATOR

(Use Key # 904 on Inquiry Card on page 71)

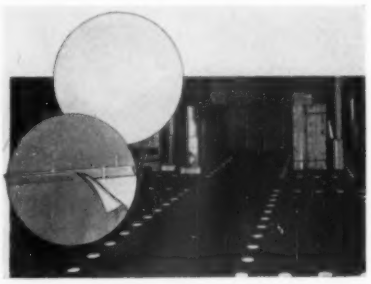
ANNOUNCED by the Pulmosan Safety Equipment Corporation is a new chemical cartridge respirator, lightweight, economical, with individually packaged replacement cartridges, and with extra visibility. All parts are replaceable at low cost, and a further economy is realized since replacement requires only one cartridge. Individual packages protect the cartridges from heat, moisture, and vapors. Respirator weighs only 7.6 ozs., including single cartridge and black aluminum body. Side and frontal view obstruction is prevented. The respirator is approved by the Bureau of Mines for use in organic vapors where there is sufficient oxygen to sustain life.

LENS CLEANING TISSUES

(Use Key # 905 on Inquiry Card on page 71)

NO-FOG cleaning tissues are announced by the Carhoff Company. They can be used on eye glasses, goggles, gas masks, windshields, glass equipment in laboratories and television installations. They work equally well on glass or plastic lenses.

Chemically treated, the tissues have a germicidal effect on eye glasses and goggles. Strong, soft and durable, they can be dried and used several times without scratching. Cold weather has no effect on the tissues. They will clean grease and grime from glasses as well as prevent fogging. Another quality claimed for the tissues is that they can be used with plain water and require no cabinets, no liquids, or servicing. Inexpensive brackets can be nailed up quickly to hold a month's supply of the tissues.



SELF-ADHESIVE AISLE MARKERS

(Use Key # 906 on Inquiry Card on page 71)

ECONOMY and simplicity of installation—plus extra safety advantages—are features of the Self-Adhesive Aisle Markers manufactured by W. H. Brady Company. Stock aisle markers are made of durable, colorful plastic, backed with a heavy duty, pressure-sensitive adhesive. They offer the maximum visibility of a dotted line. They are stocked in 4 colors—Caution Yellow, Fire Red, Safety Green and Neutral White.

The Aisle Markers are economical compared with other line marking devices and also economical to apply, according to the manufacturer. They stick fast to any clean, dry floor without moistening. Any unskilled worker can make curved or straight lines quickly and without costly machinery. Because the markers are only .005″ thick, they lie flush with the floor and won't obstruct pedestrian or vehicular traffic. The durable plastic surface of the Markers is highly resistant to abrasion. Acids, oil, grease, salts, water and most common solvents have no effect on the markers. Maintenance-wise, the markers are economical. If a marker becomes damaged, only that marker is replaced; no others need be disturbed. Simply remove existing aisle markers—apply new ones wherever needed. Stock aisle markers are recommended for use in industrial plants, offices, warehouses, shipping and receiving departments, hazardous areas, first aid rooms, garages, parking areas, power houses, stores, schools, hospitals, institutions and airport runways. Other-than-aisle marking applications include pillar and column marking, bay marking, machine and equipment identification, stairway marking and fire extinguisher and electric power marking.

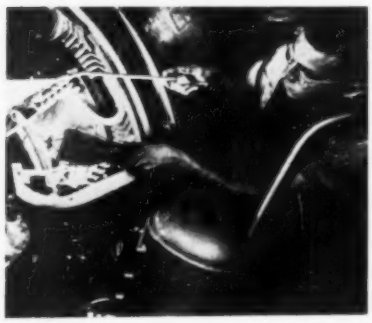
Each aisle marker is mounted on a 2-piece folded paper liner which protects the adhesive until used.

EXTRA DUTY WORK GLOVE

(Use Key # 907 on Inquiry Card on page 71)

THE newly designed Tripl-Palm work glove has been placed on the market by the Surety Rubber Company. It is excellent for handling cement blocks, molds, brick and clay products and other abrasive materials. The extra tough work glove is constructed with a heavy Vinyl synthetic rubber coating on the palm where the greatest resistance to wear and abrasion is needed most. Yet, at the same time, the glove remains soft and pliable for hand comfort and flexibility. To assure longer wearing despite rough treatment, the glove is designed with wing thumb construction which eliminates the need for inside seams where the thumb joins the palm.

Standard abrasion tests conducted by the company before placing the glove on the market proved the glove will outwear by many times, the usual coated type of work glove. Tripl-Palm gloves are available in all sizes and styles.



ELECTRICAL SAFETY CLEANER

(Use Key # 908 on Inquiry Card on page 71)

DEVELOPMENT of a highly effective quick-drying safety solvent, designed for the cleaning of electrical equipment such as wiring, fuses, motors, switches, etc., is announced by Turco Products, Inc. Especially formulated to replace carbon tetrachloride in all cleaning operations, the new product, Turco-Solv, is said to combine the least toxic solvents available, consistent with safety from fire. The solvent can be used for cleaning electrical equipment where a high-flash material is required. It can be used on the production line to remove grease pencil, chalk, ink or hand marks from motor generator sets; in a whirl parts washer as a substitute for vapor degreasing or handwiping; or as a maintenance tool in transportation.

The Solvent quickly and effectively removes all deposits of grease, oil, metallic particles, carbon dust and other causes of dangerous and costly flashovers. It leaves no oily residues and requires no after-neutralization. It is non-corrosive and safe on all metal and wood surfaces, as well as well-bonded paint. It has a flash point of over 200°F. It will not leave flammable vapors or residues upon evaporation. Since it is non-conductive, it can be used to clean motors while they are hot. It is applied by non-atomizing low pressure spray or brush.

RUBBER FOOT MATTING

(Use Key # 909 on Inquiry Card on page 71)

NOW available with waffle designed bottom offering thousands of buoyant air pockets for relief of foot and leg fatigue, a new product known as Air Strip is offered by the R. L. Mitchell Rubber Company.

Several sizes and shapes are available. A 28″ wide x 36″ long x ½″ thick type, as a complete single mat beveled at the edges on all four sides, a 28″ x 36″ x ½″ thick mat in sections which interlock (ends and centerpieces of any desired length in multiples of 3 feet), and a solid form without air pockets for areas in which limited weight supply carts might be in use, are all obtainable. The interlocking form is manufactured in black, blue, red and green for regular service and also in black only for services requiring resistance to oil, grease, chemicals, and acids. Also available in black, are 24″ x 24″ x ½″ interlocking (on all 4 sides) blocks with either the waffle pattern bottom or solid construction, to accommodate any floor area. This item is identified as the 24″ Rubberlock.

FORK TRUCK LOAD STABILIZER

(Use Key # 910 on Inquiry Card on page 71)

AN HYDRAULIC-powered load stabilizer, an attachment for fork trucks with capacities up to 6000 lbs., has been introduced by the Elwell-Parker Electric Company. The unit is specially designed for safe transportation of unstable and semistable loads; it is also designated for stable loads which are subject to rough travel where they might be bounced off the skid or pallet on which they ride. In addition to carrying loads more safely, the stabilizer allows fork truck operators to stack at great heights with maximum safety.

Fork trucks, which accommodate the stabilizer, are standard vehicles; the only alteration is to the hydraulic system to regulate the operation of the attachment. The distance between the forks and the stabilizer plate is 41-5/8″ minimum, 75″ maximum. The stabilizer is powered by an hydraulic cylinder with a pair of telescoping guides to insure smooth operation plus rigidity. Clamping pressure can be varied to suit the product being handled within limits of 150 to 1350 psi. An hydraulic pressure blow-off valve is part of the system to prevent crushing the load due to excessive clamping after the pressure has been set.

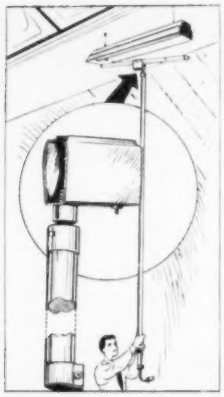
DRY-CHEMICAL EXTINGUISHER

(Use Key # 911 on Inquiry Card on page 71)

THE "Spheral Valve," a discharge valve designed to rule out all possibility of valve failure in a dry chemical fire extinguisher, is the unusual safety feature of new "Redi-Flo," Mark II, dry chemical stored pressure fire extinguishers now being supplied by Stop-Fire, Inc.

Dry chemical particles cannot foul the valve, nor can accidental distortion of the valve mechanism interfere with valve operation, because the valve's spherical design assures accurate, secure valve-seating at all times. Moreover, even though it is partially discharged repeatedly, the extinguisher will continue to hold its operating pressure. It is charged with Dri-Kem, a highly fluid, non-caking dry chemical extinguishing powder, and is pressurized at 150 and 200 psi with bone-dry nitrogen. A specially designed non-clogging discharge nozzle is also featured. The combination of dry powder, dry gas, non-clogging nozzle and non-fouling valve makes dry chemical fire extinguisher performance entirely reliable.

Another advantage offered is fast one-hand operation from bracket to fire. This is made possible by a one-hand squeeze grip, and a lever locking cam (mounted above the grip) that is released quickly by pulling back with the thumb. Although the positive, quick-acting valve mechanism works freely, deliberate motion is demanded for its operation—thus, the possibility of accidental discharge is eliminated. The dry chemical fire extinguisher is approved by Underwriters' Laboratories, Inc., and is now supplied in 3, 4, 5, 10 and 20 pound capacities; a 30 pound unit will be available shortly.

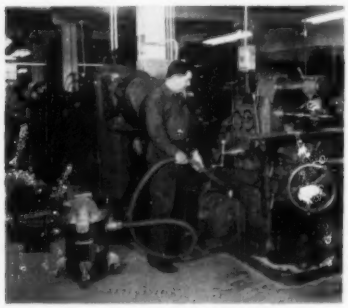


FLUORESCENT LAMP REPLACER

(Use Key # 912 on Inquiry Card on page 71)

THE replacement of fluorescent lamps by a pole with an attachment on the tip is announced by the Gets-A-Lite Company. The device mounted on the pole removes burned out fluorescent lamps and can be used to replace them with fresh lamps. The replacement can be done as high as 22 feet from the floor.

The avoidance of using ladders, scaffolds and other climbing devices to reach the fixture is an important feature of the change method. It is said to cut accidents, man hours, and breakage. Fluorescent lamp "starters" can also be changed by the device. Extension poles are available. Slimline lamps can also be replaced and washed with other pole attachments, also obtainable from this manufacturer.



HIGH AIR VELOCITY VACUUM

(Use Key # 913 on Inquiry Card on page 71)

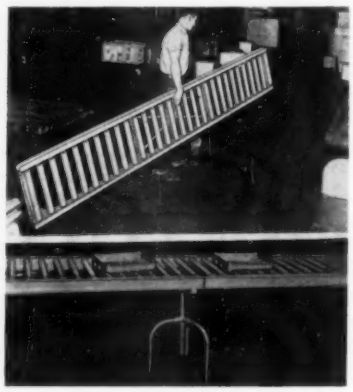
BREUER Electric Mfg. Co., manufacturers of Tornado industrial cleaning equipment, will feature the use of their Model 92 industrial vacuum cleaner in the Plant Maintenance Show this month in Chicago.

The Tornado Model 92 has suction velocity in excess of 300 m.p.h. to supply all of the needed vacuum for industrial cleaning. The machine is capable of picking up dust, dirt and metal chips, as well as water, scrubbing solutions or oil. A variety of attachments permit it to be used for cleaning floors, machinery and equipment, as well as overhead pipes and light fixtures.

NEW MAGNESIUM CONVEYOR

(Use Key # 914 on Inquiry Card on page 71)

THE introduction of a new, portable roller conveyor system has been announced by Magline Inc. Fabricated entirely of magnesium, this new gravity system combines capacity-rated strength and utility with magnesium lightness and greater ease of handling. According to the manufacturer, units weigh from 15 percent to 40 percent less than comparable



equipment of similar size and capacity, thereby providing extra facility in manual handling.

Designed primarily for use where portability and conveyor job-spotting is a major consideration, one man is reported to be able to set-up, dismantle or relocate the conveyor system in considerably less time than normally required. Of standardized construction throughout, the conveyors can be installed as a complete system, or supplied in individual sections, with couplers to match existing equipment. Portable magnesium stands in 3 height ranges, from 17" to 72" above floor level, are also offered.

LIFELINE SAFETY LOCK

(Use Key # 915 on Inquiry Card on page 71)

A DEVICE that locks within 7 inches of the spot where it is when the user slips, has been perfected to protect the lives of men climbing on vertical ladders, frameworks, derricks, highline towers—wherever there is a danger of falling. The manufacturer, Safety Tower Ladder Company, announces that the lifeline device

is easy to install, economical, all-weather-protecting, easy and convenient to use, and never failing.

Attachable to ordinary ladders, peg ladders, corner pegs, and open framework, the safety device locks and prevents a man from falling instantly, whether he slips or is knocked from his position on the ladder. It makes no difference whether the user is conscious or unconscious, he will not slip on down the ladder. The device can be installed without welding, cutting, drilling or altering the scaffolding. It does not hamper the climber going up or down. Any worker can use it without previous training or instruction. The lifeline lock is unaffected by rain, ice, mud, oil or slime. The safety mechanism functions under all conditions. Staggered ladders do not impede its use; it will slip off the top of the carrier rail at the lower level and onto the bottom of other mechanical equipment. (*see illustration*) Several workers can go up the same structure simultaneously. The safety sleeve and belt, that fits around the man, can easily be carried to and from the job with other tools because of its light weight. Three men can install the carrier rail at the rate of 100 feet in 2 hours.

Use of the device is said to be simple. The climber snaps his safety belt (furnished with lifeline lock) to the travelling sleeve, slips the sleeve onto the carrier rail, and climbs in his normal position.

FLOOR SWEEPING COMPOUND

(Use Key # 916 on Inquiry Card on page 71)

A NEW finely ground cellulose fibre material with exceptionally high absorbency, called Cottentex is now available as a floor sweeping compound. The material absorbs more than 8 times its own weight, making it ideally suited for absorbing oil, greases, battery acids, gasoline, or any liquid, etc. as well as for cleaning hands, according to the manufacturer Cottentex Mfg. Company. The compound absorbs immediately, and when swept up leaves floor clean and dry. It is soft and absolutely non-corrosive, will not harm wood, concrete, terrazzo or painted floors. It does not combine with oil or grease to form a compound and it is unnecessary to use scrapers to remove it. Economical to buy, thrifty to use and fast-acting, the compound keeps floors safe.

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

PERSONAL PROTECTION

Protective Clothing and Equipment .. 263
Chicago Eye Shield Co. A 65-page catalog, describing and illustrating, in several colors, the company's line of protective equipment, this literature includes goggles, face shields, safety lenses, helmets, masks, hoods, respirators, aprons, sleeves and grinder guards. Fully indexed, the catalog gives specifications and uses for all equipment. Emphasis is on comfort as well as safety.

Eye Protection 264
Welsh Mfg. Co. Pictured and discussed in this 16-page catalog is the company's line of eye protective equipment. Numbered among the items are clear and colored lenses, welding glass, shipper's goggles, spectacle goggles, plastic and glass lens goggles, welder's helmets, handshields and chemical goggles. Chief emphasis is placed on the mask goggle with rubber frame and nose.

Face Shield 265
Pennsylvania Optical Co. Subject of this 4-page, 2-color brochure is a line of face shields for chemical handling, wood working, metal pouring, and metal working. Aluminum-bound acetate windows, fiber crowns, sweatbands of various types, snap fasteners, and plastic sleeves plus adjustable spring tension are features of the face shields.

Welder's Garments 266
Eastern Equipment Co. An illustrated, 4-page, 2-color folder on the uses of leather and asbestos garments for the protection of welders, this literature covers the features of capes, coats, jackets, pants, chaps, sleeves, bibs, gloves, mitts, spats and aprons of leather. Also described are helmets, an electrode carrier, and asbestos garments such as gloves and mitts.

MATERIALS—HANDLING EQUIPMENT

Woven Wire Slings 267
Cambridge Wire Cloth Co. Safety, flexibility, strength, and low maintenance cost are featured in this 16-page catalog on woven wire slings. Typical applications are illustrated, strength data listed, construction details shown, and dimensions and specifications covered.

Mobile Workshop 268
Stahl Metal Products, Inc. The time-saving qualities of a mobile workshop for maintenance men are stressed in this 2-page bulletin. Illustrated in detail, the mobile workshop moves ladders, tools, equipment, parts, and supplies. It tows by industrial truck and can also be moved by hand. Dimensions and specifications are included.

Dockboards 269
Magnesium. Co. of America. Titled "Look into These Facts about Dockboards," this file of facts on dockboards covers such matters as product information, the cost of dockboards, the fitting to specific needs, and experiences of particular companies with this type of equipment.

Steel Handling Equipment 270
Elizabeth Iron Works, Inc. The company's complete line of all-steel materials-handling equipment is illustrated and described in this 6-page, 2-color folder. Divided into 3 sections, the brochure covers ramps, determination of height differential between car floor and platform, and pallet stackers. Complete specifications are included.

FIRE PROTECTION

Dip Tank 271
The Protectoseal Co. Fire preventive cleaning of production parts is accomplished with the use of the foot treadle dip tank discussed in this 2-page, 2-color bulletin. Convenient size, and a self-closing cover are the features emphasized. A "tip-proof" stand and one-piece construction, correct height, and practical shape are also noted.

Fire Rescue Suit 272
Industrial Safety Specialties Co., Inc. This 6-page, 2-color folder details the uses, features, specifications, and needs for this fire rescue suit. The light-weight, high-heat resistance, ease of donning, and freedom of movement of the suit receive most attention. Air breathing apparatus and rescue blanket are also covered.

Foam Liquid 273
National Foam System, Inc. Fire-tested foam liquid for fighting flammable liquid fires is the subject of this 2-color, 1-page bulletin. Complete, dependable protection is claimed for the liquid, which is said to form tight, closely-knit bubbles that will not dissipate under heat or drafts. The foam can be used for portable foam generators, foam extinguishing systems, and extinguishers.

Electrostatic Hazards 274
The John Hewson Co. A paper on electrostatic hazards in hospital operating rooms is made available by this company for interested persons, hospitals, and companies. The paper offers information on how to reduce the hazard of static-caused ignitions and explosions to a minimum not only in hospital operating rooms, but in all types of operations where static is a hazard.

MEDICAL AIDS

Stretchers & Fracture Equipment 275
Orthopedic Equipment Co. This complete 132-page catalog describes and illustrates orthopedic supplies, bone instruments, splints, stretchers, fracture appliances, tourniquets, and many other orthopedic materials. In 2-colors, the catalog includes specifications, uses and an index for all items covered.

Antiseptic 276
Hynson, Westcott & Dunning, Inc. First aid by the layman in the care of wounds through the use of mercurochrome is discussed in this 16-page, 2-color, illustrated booklet. Infection, microbes, first aid kits, proper bandaging and antisepsis, and the method and proper time for applying mercurochrome are covered.

SANITATION

Soap Dispensers 277
Bobrick Mfg. Corp. A 4-page, 2-color brochure, this literature discusses and illustrates dispensers for lotions and detergents, powdered soap, liquid soap, lavatory types, liquid soap in other forms, and gravity feed dispensing systems. Specifications are given and uses outlined.

Industrial Sanitation Systems 278
Abco, Inc. Case histories of industrial sanitary maintenance engineering are given first place in this 6-page brochure. Reduction in cost and man-hours with increased sanitation benefits are featured in the program proposed in the brochure. Surveys to determine the nature and proper solution of sanitation problems are also discussed.

PLANT MAINTENANCE

Industrial Wipers 279
Scott Paper Co. A series of questions and answers for supervisors about the company's new industrial wipers are given in this 8-page informational booklet. Questions such as what the wipers are, why they are dispensed as they are, why they are made the way they are, what they do, what they can be used with, what their safety features are, how they affect good housekeeping and how to use them are posed and answered.

Solvents 280
Fine Organics, Inc. Solvents for cleaning electrical and mechanical equipment are discussed in this 4-page, 2-color bulletin. Emphasized are the high flash point, stability, low toxicity, and no residue of the solvents. Drying time, non-corrosiveness, and electrical properties of the solvents are also stressed. Also listed are solvents for special cleaning purposes, such as refrigerant systems, oxygen equipment, fabrics, and softening dielectric varnishes.

Antiseptic Floor Treatment 281
Huntington Laboratories, Inc. Explained and illustrated in this 6-page folder is an antiseptic floor cleaner which can be sprayed or mopped. It is said to stop the growth of bacteria on floors and in mops; also to clean from the applicator easily, be inexpensive, and to cut maintenance time.

(Continued on next page)

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Free Bulletins (Cont'd)

Floor Finishes 283
Multi-Clean Products, Inc. A reference chart giving complete coverage specifications for 15 floor finishes made by the company is presented in this literature. The chart indicates the types of floor treatment recommended for various types of floors. In 2 colors, the chart also recommends applications of combinations of liquid finishes and gives drying times, product characteristics, and mixing formulas.

Corrosion Protection Coating 284
Pittsburgh Coke & Chemical Co. A tar base coating, that is said to withstand severest corrosive conditions, is covered in this 4-page, 2-color bulletin. Applications, specifications and typical uses on concrete, brick, stone, and steel are given. Features of the coating and illustrations are also included.

MISCELLANEOUS

Pressure Dangers 285
Hose Accessories Co. A safety booklet prepared to aid hose users in securing long and trouble-free life from both hose and hose couplings, and to avoid serious and fatal accidents, this 8-page, 2-color booklet is entitled "Dangers Under Pressure." The proper selection and application of couplings for air, gas, or steam hoses are included.

Punch Press Guard 286
Searjeant Metal Products, Inc. Discussed and illustrated in this 2-page, 2-color bulletin is a basket type guard for punch presses. Specifications, use and particular safety features are explained. The guard is designed to fit all types and makes of punch presses. Featured is the clear view front window in the guard.

Industrial & Housekeeping Signs 287
Stonehouse Signs, Inc. This 4-page, multi-color bulletin devotes itself to illustrating and describing a number of types of signs for industrial uses. Specifications are included. The signs are of steel with a baked varnish or porcelain finish.

Air Circulating Equipment 288
Aerovent Fan Co., Inc. This 65-page, 3-color catalog begins with a discussion of the aerodynamics of the company's line of air circulating equipment. The research and facilities which the company has devoted to the problem are sketched. Ducts, ventilating requirements, materials, and many types of fans are illustrated and detailed. Ratings, specifications, uses, maintenance and lubrication are among many topics covered in the catalog.

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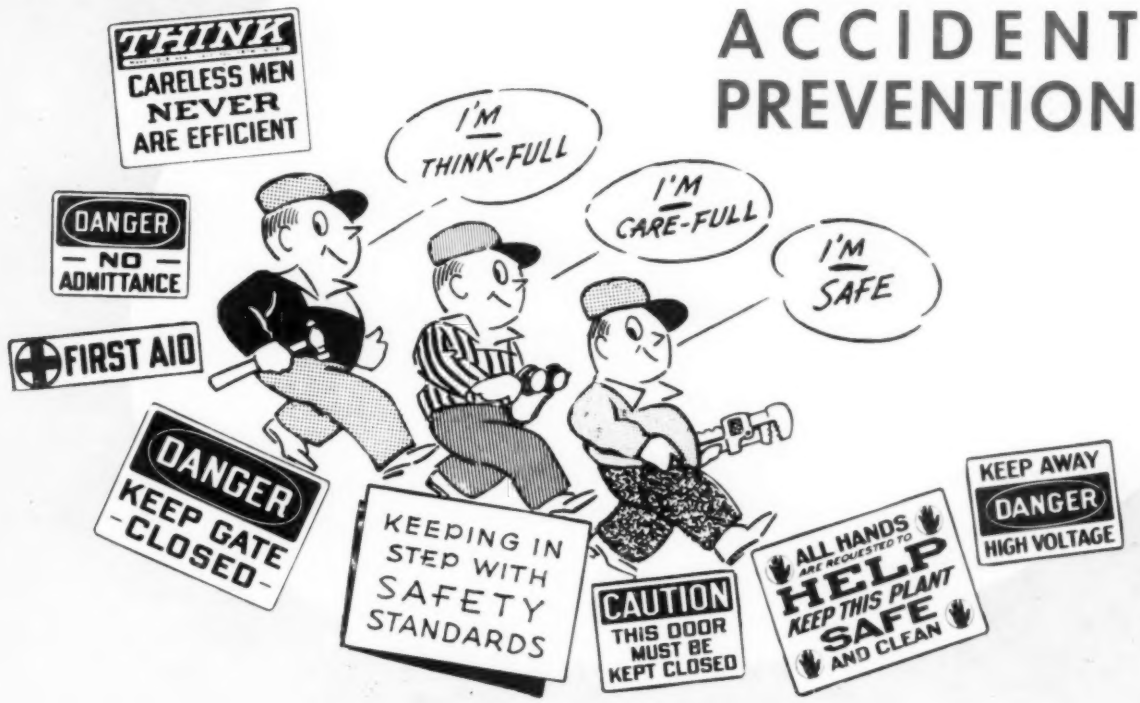

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